MICHAEL PHELPS LEGEND SERIES OWNERS MANUAL

INTERNATIONAL

Welcome To Ultimate Relaxation!

Thank you for choosing your new spa built by Master Spas. Please read the entire Owner's Manual before installing and using your spa. The goal of this manual is to provide you with safety and operational information plus some tips that will help you enjoy your spa to its fullest.

At the time of print, this manual is accurate in its information. Master Spas reserves the right to change or improve its product without prior notice. To check on updates or for other information, please visit www.masterspas.com and follow the links to the customer service section.

Record Of Ownership

Name_____

Address_____

City _____ State _____ Zip _____

Phone # (_____)_____-_____ Date Purchased _____ /_____ /_____

Model _____ Serial #_____

Dealer Name _____

Service Tech Rep _____

Serial Number Location

The serial number for your spa is located in the filter area, on the spa system pack, or on the listing plate on the skirting. It is a seven digit number. Ex. 1445900

MASTER SPAS®

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SAVE THESE INSTRUCTIONS

Included with your new spa is a safety sign. The sign is for you and your guest's protection and is suitable for outdoor use in wet locations. The sign should be placed in a location visible to all users of the spa.

Please take time to point out the physical location of the safety sign and the importance of the safety precautions displayed on the safety sign to all of your guests. Remember, your safety and the safety of anyone who enjoys the use of your spa is our utmost concern.

The sign should be mounted with screws or another type of permanent fastener. Additional or replacement signs can be obtained from your dealer or direct from the factory.

INTRODUCTION

It's time to relax! You now have your very own portable spa by Master Spas, Inc. By fully understanding the operation of each of the features of your new Master Spa, you will be assured of many years of hassle-free, hot water therapy and fun.

Your safety is of paramount importance to the MasterSpas family. We urge you to read and become thoroughly familiar with all safety aspects addressed in this manual.

Through reading and totally understanding the important information in your owner's manual, you will realize that you now own **THE ULTIMATE RELAXATION MACHINE!**

NO DIVING **DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.**

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should be observed including the following:

READ AND FOLLOW ALL INSTRUCTIONS

WARNING – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

A wire conductor is provided on this unit to connect a minimum 6 AWG (13.302mm^2) solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit

(For cord-connected/convertible units)

DANGER – Risk of injury.

a) Replace damaged cord immediately.
b) Do not bury cord.
c) Connect to a grounded, grounding type receptacle only.

(For units intended for indoor use only)

WARNING – For indoor use only. This unit is not intended for outdoor use.

(For units intended for outdoor use only)

WARNING – For outdoor use only. This unit is not intended for indoor use.

IMPORTANT SAFETY INSTRUCTIONS (CONT.)

DANGER – Risk of Accidental Drowning. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use this spa unless they are supervised at all times.

DANGER – Risk of Injury. The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible.

Never operate spa if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.

DANGER – Risk of Electric Shock. Install at least 5 feet (1.5m) from all metal surfaces. As an alternative, a spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum 8AWG (8.4mm^2) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.

DANGER – Risk of Electric Shock. Do not permit any electric appliance, such as a light, telephone, radio, or television, within 5 feet (1.5 m) of a spa.

WARNING – To reduce the risk of injury:

a) The water in a spa should never exceed 40˚C (104˚F). Water temperatures between 38˚C (100˚F) and 40˚C are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when spa use exceeds 10 minutes.

NO DIVING **DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.**

IMPORTANT SAFETY INSTRUCTIONS (CONT.)

b) Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 38˚C (100˚F).

c) Before entering a spa, the user should measure the water temperature since the tolerance of water temperature- regulating devices varies.

d) The use of alcohol, drugs, or medication before or during spa use may lead to unconsciousness with the possibility of drowning.

e) Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa.

f) Persons using medication should consult a physician before using a spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.

(For spas with a gas heater)

WARNING – Risk of Suffocation. This spa is equipped with a gas heater and is intended for outdoor use only unless proper ventilation can be provided for an indoor installation.

HYPERTHERMIA

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6° F.

THE SYMPTOMS OF HYPERTHERMIA INCLUDE:

• Dizziness • Fainting • Drowsiness • Lethargy
• Increase in Internal Body Temperature

THE EFFECTS OF HYPERTHERMIA INCLUDE:

Unawareness of Impending Hazard • Failure to Perceive Heat • Failure to Recognize the Need to Exit Spa • Physical Inability to Exit Spa • Fetal Damage in Pregnant Women • Unconsciousness Resulting in a Danger of Drowning

NO DIVING **DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.**

IMPORTANT SAFETY INSTRUCTIONS (CONT.)

DANGER – To reduce the risk of injury to persons, do not remove the suction grate. Suction through drains and skimmers is powerful when the jets in the spa are in use. Damaged covers can be hazardous to small children and adults with long hair. Should any part of the body be drawn into these fittings, turn off the spa immediately. As a precaution, long hair should not be allowed to float in the spa.

WARNING – Install the spa so that water can be easily drained out of the compartment containing electrical components so as not to damage equipment. When installing the spa make sure to allow for an adequate drainage system to deal with any overflow water. Please allow for at least 2 feet of clearance around the perimeter of the spa to provide enough room to access for servicing. Contact your local dealer for their specific requirements.

WARNING – The spa should be covered with an approved locking cover when not in use, to prevent unauthorized entry and injuries.

WARNING – People with infections, sores or the like should not use the spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.

CAUTION – Safe temperatures for swimming or aquatic exercise is around 80˚F.

CAUTION – Risk of Electrical Shock. Do not leave audio compartment open. Audio CD controls are not to be operated while inside the spa.

CAUTION – Replace components only with identical components.

WARNING – Risk of Electric Shock. Do not connect any auxiliary components (for example, additional speakers, headphones, additional audio/ video components etc.)
to the system. These units are not provided with an outdoor antenna.

Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

If the power supply cord(s) are damaged, water is entering the speaker, audio compartment, or any other component in the electrical equipment compartment area, the protective shield is showing signs of deterioration, or there are signs of other potentially hazardous damage to the unit, turn off the circuit breaker from the wall and refer servicing to qualified personnel.

IMPORTANT SAFETY INSTRUCTIONS (CONT.)

The unit should be subjected to periodic routine maintenance once every quarter to make sure that the it is operating properly.

DANGER – Risk of Electric Shock. A green colored terminal or a terminal marked G, GR, Ground, Grounding or the symbol shown in Figure 14.1 of UL 1563 is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.

At least two lugs marked "Bonding Lugs" are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the spa to these terminals with an insulated or bare copper conductor not smaller than 8AWG.

All field installed metal components such as rails, ladders, drains, or other similar hardware within 3m of the spa shall be bonded to the equipment grounding bus with copper conductors not smaller than 8AWG.

SAVE THESE INSTRUCTIONS

SAFETY INSTRUCTIONS

WARNING: CHILDREN SHOULD NOT USE SPAS OR HOT TUBS WITHOUT ADULT SUPERVISION
AVERTISSEMENT: NE PAS LAISSER LES ENFANTS UTILISER UNE CUVE DE RELAXATION SANS SURVEILLANCE

WARNING: DO NOT USE SPAS OR HOT TUBS UNLESS ALL SUCTION GUARDS ARE INSTALLED TO PREVENT BODY AND HAIR ENTRAPMENT.
AVERTISSEMENT: POUR ÉVITER QUE LES CHEVEUX OU UNE PARTIE DU CORPS PUISSENT ÊTRE ASPIRES, NE PAS UTILISER UNE CUVE DE RELAXATION SI LES GRILLES DI PRISE D'ASPIRATION NE SONT PAS TOUTES EN PLACE

WARNING: PEOPLE USING MEDICATIONS AND/OR HAVING AN ADVERSE MEDICAL HISTORY SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB.
AVERTISSEMENT: LES PERSONNES QUI PRENNENT DES MÉDICAMENTS OU ONT DES PROBLÉMES DE SANTÉ DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: PEOPLE WITH INFECTIOUS DISEASES SHOULD NOT USE A SPA OR HOT TUB
AVERTISSEMENT: LES PERSONNES ATTEINTES DE MALADIES INFECTIEUSES NE DEVRAIENT PAS UTILISER UNE CUVE DE RELAXATION

WARNING: TO AVOID INJURY EXERCISE CARE WHEN ENTERING OR EXITING THE SPA OR HOT TUB.
AVERTISSEMENT: POUR ÉVITER DES BLESSURES, USER DE PRUDENCE EN ENTRANT DANS UNE CUVE DE RELAXATION ET EN SORTANT

WARNING: DO NOT USE DRUGS OR ALCOHOL BEFORE OR DURING THE USE OF A SPA OR HOT TUB TO AVOID UNCONSCIOUSNESS AND POSSIBLE DROWNING
AVERTISSEMENT: POUR ÉVITER L'ÉVANOUISSEMENT ET LA NOYADE ÉVENTUELLE, NE PRENDE NI DROGUE NI ALCOOL AVANT D'UTILISER UNE CUVE DE RELAXATION NI QUAND ON S'Y TROUVE

WARNING: PREGNANT OR POSSIBLY PREGNANT WOMEN SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB.
AVERTISSEMENT: LES FEMMES ENCEINTES, QUE LEUR GROSSESSE SOIT CONFIRMÉE OU NON, DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: WATER TEMPERATURE IN EXCESS OF 38˚C MAY BE INJURIOUS TO YOUR HEALTH
AVERTISSEMENT: IL PEUT ÊTRE DANGEREUX POUR LA SANTÉ DE SE PLONGER DANS DE L'EAU A PLUS DE 38˚C

WARNING: BEFORE ENTERING THE SPA OR HOT TUB MEASURE THE WATER TEMPERATURE WITH AN ACCURATE THERMOMETER
AVERTISSEMENT: AVANT D'UTILISER UNE CUVE DE RELAXATION MESURER LA TEMPÉRATURE DE L'EAU À L'AIDE D'UN THERMOMÉTRE PRÉCIS

WARNING: DO NOT USE A SPA OR HOT TUB IMMEDIATELY FOLLOWING STRENUOUS EXERCISE

AVERTISSEMENT: NE PAS UTILISER UNE CUVE DE RELAXATION IMMÉDIATEMENT APRÉS UN EXERCISE FATIGANT

WARNING: PROLONGED IMMERSION IN A SPA OR HOT TUB MAY BE INJUROUS TO YOUR HEALTH

AVERTISSEMENT: L'UTILISATION PROLONGÉE D'UNE CUVE DE RELAXATION PEUT ÊTRE DANGEREUSE POUR LA SANTÉ

WARNING: DO NOT PERMIT ELECTRIC APPLIANCES (SUCH AS LIGHT, TELEPHONE, RADIO, OR TELEVISION) WITHIN 1.5 M OF THIS SPA OR HOT TUB

AVERTISSEMENT: NE PAS PLACER D'APPAREIL ÉLECTRIQUE (LUMINAIRE, TÉLÉPHONE, RADIO, TÉLÉVISEUR, ETC) À MOINS DE 1.5 M DE CETTE CUVE DE RELAXATION

CAUTION: MAINTAIN WATER CHEMISTRY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION

ATTENTION: LA TENEUR DE L'EAU EN MATIÉRES DISSOUTES DOIT ÊTRE CONFORME AUX DIRECTIVES DU FABRICANT

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 37˚C. The symtoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include

(a) unawareness of impending hazard;
(b) failure to perceive heat;
(c) failure to recognize the need to exit spa;
(d) physical inability to exit spa;
(e) fetal damage in pregnant women; and
(f) unconsciousness and danger of drowning.

WARNING: THE USE OF ALCOHOL OR DRUGS CAN GREATLY INCREASE THE RISK OF FATAL HYPERTHERMIA IN HOT TUBS AND SPAS

LA CONSOMMATION D'ALCOOL OU DE DROGUE AUGMENTE CONSIDÉRABLEMENT LES RISQUES D'HYPERTHERMIE MORTELLE DANS UNE CUVE DE RELAXATION.

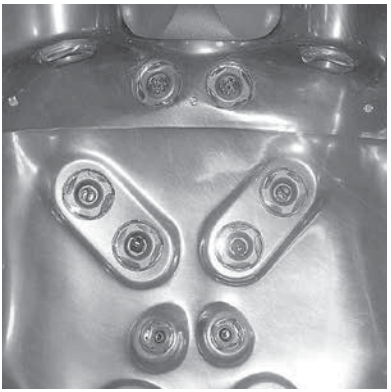
1. NECK JETS

2. SHOULDER JETS

3. THERAPY JETS

4. MASTER BLASTER FOOT THERAPY JET

Your new Master Spa features a variety of jet styles. All jets, regardless of style return the water to the spa. Air is mixed with the water by using the air controls (if equipped) creating a gentle to most vigorous massage. Water flow is adjusted by simply turning the outer face of the jet. Your Master Spa will have a combination of pulsating, rotating, dual pulsating and directional adjustable jets.



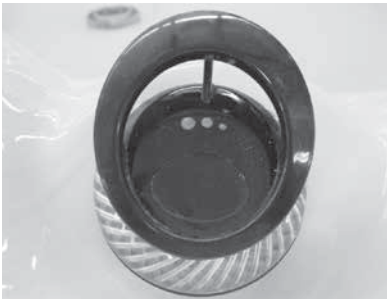
Neck, Shoulder, Therapy Jets

Master Blaster

5. JET DIVERTER VALVE

Located on the topside of the spa, this valve physically diverts the flow of water from one jet zone of the spa to another jet zone.

Be sure that no sand or particles are brought into the spa as they will cause the diverter to seize up. It is best to turn the diverter valve only when the pump is turned off.

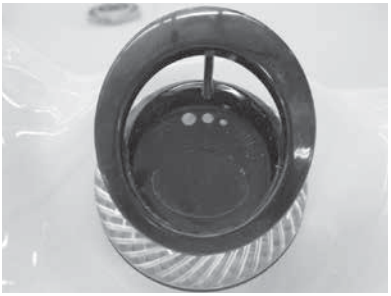


LSX Jet Diverter

6. AQUATERRACE WATERFALL / AQUAFONTAINE VALVE

Located on the topside of the spa, this valve adjusts water flow to the AquaTerrace waterfall and the AquaFontaine Jets.

NOTE: When water features are not going to be used for an extended period of time, turn valve slightly to allow some water to flow when pump is on to prevent stagnent water from developing in the water lines.

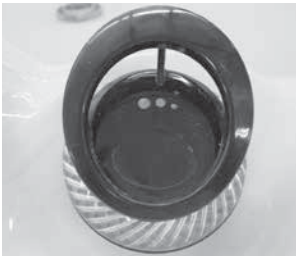


AquaTerrace Waterfall / AquaFontaine

AqauFontaine

7. AIR CONTROL VALVES

These are located around the top of your spa. You may increase or decrease the force of your jets by opening or closing the air control valves. Typically, one dial controls the air to water ratio and mix to one group of jets. When not in use the air controls should be kept in the closed position, as air bubbles tend to cool the water.



Air Control

8. TOPSIDE CONTROL PANEL

You may safely control spa functions from inside or outside your spa using the Topside Control Panel. This Panel is used to control the water temperature, pumps, the spa light, automatic filtration cycles and other advanced functions. The digital display will give you a constant temperature readout and will notify you in case of certain malfunctions. Several user programmable functions are also available.

9. PERSONAL REMOTE CONTROL

The Legend Series spas have additional remotes which allow the user to control the jet therapy while remaining in his/her seat (if applicable). By pressing the control one time, you will activate the pump. Press the pad again for high speed and again to turn it off.

Personal Remote Control

10. EQUIPMENT ACCESS PANEL

Located behind the side panel below the Topside Control Panel, this area houses the major components responsible for the spas operation. Those components include the pumps, heater, control panel box, ozonator, and LED light system (if applicable). Pump and equipment placement may vary by model.

11. ACCESS PANELS

These are located on all four sides of the spa. All of the panels are removable should service be required.

12. DRAINING YOUR SPA

The drain is located behind a removable corner panel. This panel is on the right side of the spa as you are facing the topside control panel. You can access the drain by unscrewing the corner screws and removing the corner panel. Grasp the drain cap, and pull the assembly out all the way. Unscrew the cap, then push the assembly back in half way to start the flow of water. Attach a garden hose, if desired. Draining times may vary by model using the external hose bib. A sump pump may also be used to drain the spa quickly. **NOTE:** When pushing or pulling the assembly in or out, water will drip from the drain during the transition. This is normal.

Spa Drain

13. FILTER LID

Your filter lid will serve to prevent major objects from entering your filter area and possibly damaging your filter elements which are located under the filter lid. These filter elements are designed to remove small debris and oils from your spa water.

14. WEIR GATE

The weir gate is the horizontal door located in front of the filters that trap debris in the filter area

15. EQUIPMENT CONTROL SYSTEM

This houses the wiring and electrical components necessary to operate the spa.

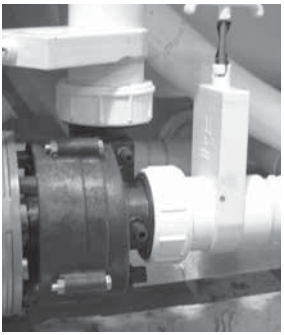
16. SPA HEATER

This element is an electric heater housed in a stainless steel tube. It is thermostatically controlled and equipped with a high-limit temperature safety shut-off sensor. The high-limit sensor cannot be reset until the temperature within the heater assembly drops several degrees below the shut-off temperature of 108° - 110° F (varies by model). Should the high-limit switch trip repeatedly, contact your dealer or qualified service representative to diagnose the problem.

17. SLICE VALVES

These valves are used by service personnel to shut off water to the heater, main pump system and secondary pump system so that the water does not need to be drained should the spa require service (varies by model).

NOTE: Slice valves must be completely open during normal operations.



Slice Valve and Pump Union

18. MAIN PUMP

This produces water flow through the main jets in the spa. The first pump may be operated on two speeds. Low speed will produce efficient water circulation during filtration and gentle jet action. High speed should be used for maximum jet action. The main pump is controlled by the "Jets" or "Jets I" button on the Topside Control Panel.

19. SECONDARY PUMP

This produces water flow through the other jet system in the spa (if applicable). The second pump operates similar to the main pump and is controlled by the "Jets II" or "Aux" button on the Topside Control Panel or by using the Personal Remote Control.

20. CIRCULATION PUMP

This produces water flow through the heater in the spa and provides the water flow necessary to actuate the ozone generator. This fractional HP pump runs for 24 hours of efficient filtration and heating. This pump is standard on all LSX Series spas.

21. PUMP UNION

These are used by service personnel to easily service the pumps.

22. HEATER UNION

These are used by service personnel to easily service the heater.

23. MAST3RPUR

Your U/V ozone generator operates with the 24 hour circulation pump to help sanitize the water.

24. THIRD PUMP (on select models)

This produces water flow through the Master Blaster Jets located in the foot well of your spa. This pump functions on high speed only.

ELECTRICAL INSTALLATION REQUIREMENTS FOR ALL MODELS

HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION BEFORE INSTALLATION BEGINS
Electrical connections made improperly, or the use of wire gauge sizes for incurring power which are too small, may continually blow fuses in the electrical equipment box, may damage the internal electrical controls and components, may be unsafe and in any case will void your warranty.

It is the responsibility of the spa owner to ensure that electrical connections are made by a qualified electrician in accordance with the National Electrical Code and any local and state electrical codes in force at the time of installation.

These connections must be made in accordance with the wiring diagrams found inside the control box and In this manual. This equipment has been designed to operate on 50Hz. alternating current only, 230 volts are required. Make sure that power is not applied while performing any electrical installation. A bonding lug for bonding copper wire has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 8 AWG (8.36mm^2 copper wire unless local or state codes require a heavier gauge wire) and must be connected securely to a grounded metal structure such as a cold water pipe. See below chart for wire size conversion. All Master Spas equipment packs are wired for 230 VAC only. The only electrical supply for your spa must include a switch or circuit breaker to open all non-grounded supply conductors to comply with BS7671 (or other local jurisdiction code or law). The disconnect must be readily accessible to the spa occupants, but installed at least five feet from the spa. Residual Current Device (RCD) must be used to comply with this manual, BS 7671, or and any local electrical code or law requirements. A residual current is a current leak from any one of the supply conductors to ground. An RCD is designed to automatically shut off power to a piece of equipment when a ground fault is detected.

Route the cable into the equipment area for final hook-up to terminals inside the control pack or junction box. The spa must be hooked up to a "dedicated" breaker(s) and RCD. The term "dedicated" means the electrical circuit for the spa is not being used for any other electrical items (patio lights, appliances, garage circuits, etc.). If the spa is connected to a non-dedicated circuit, overloading will result in "nuisance tripping" which requires resetting of the breaker switch at the house electrical panel.

Permanently Connected Equipment Assembly with Pump(s), Heaters, Luminaine, Ozone, Spa Side Control(s), Pump shut off device, and Audio/Video Components.

NOTE: Some of the above components may be optional or not available with every spa model.

See the spa specification section of this owner's manual for the control system installed in your spa.

230 VOLT 50 HZ – RESIDUAL CURRENT DEVICES (RCDs)

A residual current device (RCD, or R.C.D. henceforth) is the generic term for a device that monitors the current in the line conductor and the neutral conductor in an earthed system.

In a circuit that's operating properly, the vector sum of the live and neutral current values added together will be zero. Current flowing to earth, due to a line earth fault, will return via the earth conductor, and regardless of load conditions, will be registered as a fault. This current flow will give rise to a residual current that will be detected by the device. If the residual current exceeds the rated sensitivity of the RCD, it will automatically activate a tripping of the faulty circuit.

Two Pole RCD

Four Pole RCD

Typical specifications are as follows:

Residual Current Devices (RCDs) range

Sensitivity – from 10 to 500mA

Voltage – 2 poles: 230V; 3/4 poles: 230/400V

Connection capacity
- 25A: 6/10 mm^2 (flexible/rigid cable)
- 40,60A: 16/25 mm^2
- 80,100: 35/50 mm^2

Total Ampere Rating of Power System	Minimum Wire Size Use Copper ONLY with 90°C Insulation	Ampere Rating of RCD Circuit-Breaker
0 A to 16 A	#12 AWG / 3.31 mm^2	20
16 A to 20 A	#10 AWG / 5.26 mm^2	25
20 A to 24 A	#10 AWG / 5.26 mm^2	30
24 A to 28 A	#8 AWG / 8.36 mm^2	35
28 A to 32 A	#8 AWG / 8.36 mm^2	40

WIRING SCHEMATIC –
230 VOLT SPA HOOK-UP MS1700E

As Manufactured: Single Service, TN and TT Electrical Systems (1x16 Amp or 1x32 Amp)* 3 Wires (1 Line + 1 Neutral + 1 Protective Earth). Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked. All equipment (pumps, heater, etc.) runs on service line L1.

Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity. Dip switch settings should not be changed from factory settings in this configuration.

This option is configured and shipped as the default.

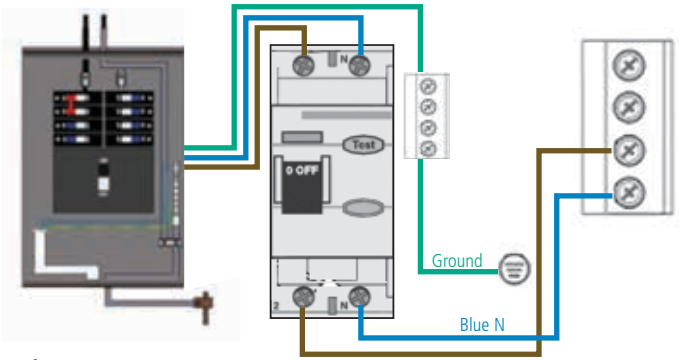


Figure 1

Optional 1: Dual Service, TN and TT Electrical Systems (2x16 Amp). 5 Wires (2 Lines + 2 Neutrals + 1 Protective Earth)*. Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked. The heater runs on service line L1. All equipment (pumps, etc.) runs on service line L2.

IMPORTANT: Each service MUST include a neutral wire, with a line to neutral voltage of 230VAC.

Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity (L1, L2).

WIRING SCHEMATIC –
230 VOLT SPA HOOK-UP MS1700E (CONT.)

Optional 2: 3-Phase Service, TN and TT Electrical Systems 5 Wires (3 Lines + 1 Neutral + 1 Protective Earth)*. Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked.

IMPORTANT: Each service MUST include a neutral wire, with a line to neutral voltage of 230VAC.

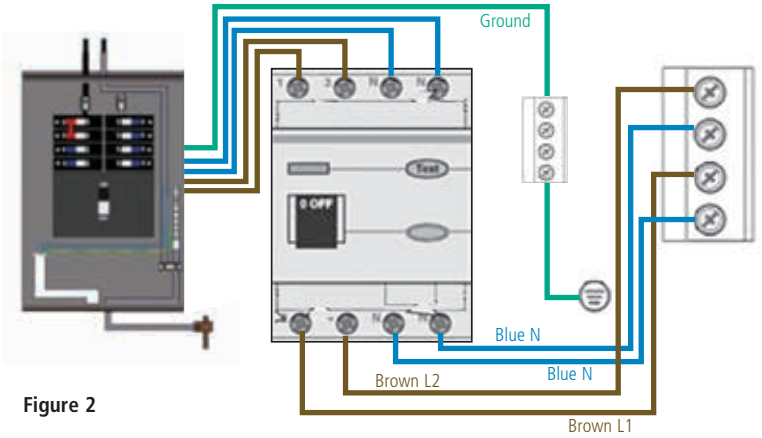
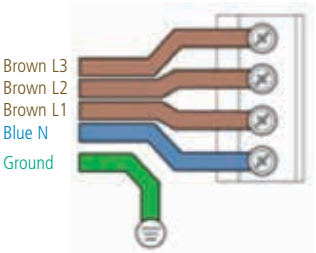


Figure 2

The heater runs on service line L1. All main-board equipment runs on service line L3. Additional equipment, such as expansion boards, run on service line L2.

Completely remove the white wire from J26 and J32, or J25. Completely remove the blue wire from J28 and J58. If an expansion board is installed, black wire must connect J28 (Line L2) only. Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity (L1, L2, L3).



** Must be sized to spa specification. Spa rated maximum ampacity cannot exceed the service maximum ampacity. This does not represent an option to the Installer.*

NOTE: Actual wiring of RCD will vary by manufacturer of RCD. Improper wiring of RCD may result in permanent damage to spa control pack. Repair / replacement of spa system box is not covered under warranty when damage results from improper wiring. Actual wire attachment points on the Spa Control Pack may vary. Always refer to the wiring diagram inside the Spa Control Pack for proper power connection.

WIRING SCHEMATIC –
230 VOLT SPA HOOK-UP MS40E

As Manufactured: Single Service, TN and TT Electrical Systems (1x16 Amp or 1x32 Amp)* 3 Wires (1 Line + 1 Neutral + 1 Protective Earth). Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked. All equipment (pumps, heater, etc.) runs on service line L1.

Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity. Dip switch settings should not be changed from factory settings in this configuration.

This option is configured and shipped as the default.

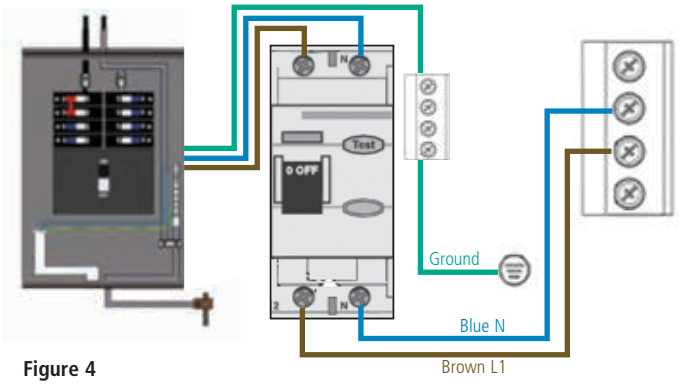


Figure 4

230V 2 phase / 2x16A:

Optional 1: 3-Phase Service, TN and TT Electrical Systems 5 Wires (3 Lines + 1 Neutral + 1 Protective Earth)*. Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked.

IMPORTANT: Each service MUST include a neutral wire, with a line to neutral voltage of 230VAC.

The heater runs on service line L1. All main-board equipment runs on service line L3. Additional equipment, such as expansion boards, run on service line L2.

Completely remove the wire that goes from J52 to J62. Completely remove the wire that goes from J51 to J88. Move the wire that goes to J12 to J79. Move the wire that goes to J36 to J48. If an expansion board is installed, black wire must connect to J53 (Line L3) only, and white wire must connect to J4 (Neutral). Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity (L1, L2, L3).

WIRING SCHEMATIC –
230 VOLT SPA HOOK-UP MS40E (CONT.)

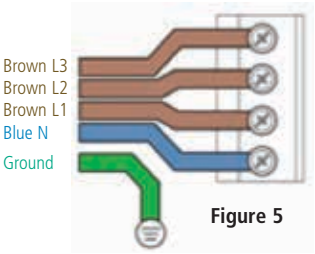


Figure 5

** Must be sized to spa specification. Spa rated maximum ampacity cannot exceed the service maximum ampacity. This does not represent an option to the Installer.*

NOTE: Actual wiring of RCD will vary by manufacturer of RCD. Improper wiring of RCD may result in permanent damage to spa control pack. Repair / replacement of spa system box is not covered under warranty when damage results from improper wiring. Actual wire attachment points on the Spa Control Pack may vary. Always refer to the wiring diagram inside the Spa Control Pack for proper power connection.

WIRING SCHEMATIC –
230 VOLT SPA HOOK-UP MS50E

As Manufactured: Single Service, TN and TT Electrical Systems (1x16 Amp or 1x32 Amp)* 3 Wires (1 Line + 1 Neutral + 1 Protective Earth). Protective Earth wire (Green/Yellow) must be connected to system ground terminal as marked. All equipment (pumps, heater, etc.) runs on service line L1.

Heat Disable dip switches must be evaluated to prevent the spa maximum ampacity from exceeding the service maximum ampacity. Dip switch settings should not be changed from factory settings in this configuration.

This option is configured and shipped as the default.

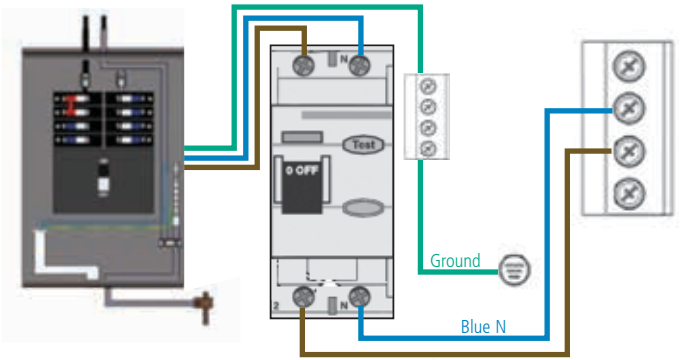


Figure 6

230V 2 phase / 2x16A:

230V 3 phase / 3x16A:

** Must be sized to spa specification. Spa rated maximum ampacity cannot exceed the service maximum ampacity. This does not represent an option to the Installer.*

NOTE: Actual wiring of RCD will vary by manufacturer of RCD. Improper wiring of RCD may result in permanent damage to spa control pack. Repair / replacement of spa system box is not covered under warranty when damage results from improper wiring. Actual wire attachment points on the Spa Control Pack may vary. Always refer to the wiring diagram inside the Spa Control Pack for proper power connection.

SITE PREPARATION / GENERAL GUIDELINES

Portable spa installation is simple when properly planned. It is important that you read the following information carefully and consult with your Master Spas dealer.

1) Access - The actual dimensions of your new spa will determine the amount of space that is needed in moving the spa from curbside to its final installation area. Be sure to measure side yard dimensions, gates or doors and vertical obstructions such as roof overhangs and overhead cables. Any other space limiting obstacles such as trees or shrubs must be evaluated.
2) If the spa is being installed indoors, dimension limitations such as stairs, ceilings and walls must be taken into consideration. Please have your Master Spas dealer or delivery service review site or installation plans prior to delivery.
3) Surface/Pad Requirements - When your new spa is filled with water and bathers, it may weigh as much as several tons. It is imperative that the base beneath the spa can support the entire weight. The spa must be on a uniformly firm, continuous, and level surface. The recommended foundation is a concrete pad with a minimum thickness of four (4) inches with steel reinforcement bars crossed throughout the pad.

IMPORTANT

When installing your spa indoors, on a wood deck, or balcony, the same load requirements must be met. Total load may be as much as 90 pounds per square foot. You should speak with a qualified contractor or your local building department to confirm that your surface is adequate for supporting a spa. Be sure to locate your spa so that equipment remains above grade and is not subject to flooding.

The equipment side(s) of the spa must be accessible in the event that future service is needed. Periodical maintenance checks require entry into the equipment bay. When possible, it is wise planning for the future to leave 2 feet of access to all sides of the spa in the event your spas plumbing requires maintenance. Your spa warranty does not cover the cost of providing access for service.

GENERAL CONSIDERATIONS FOR OUTDOOR INSTALLATION

Again, proper planning will increase your total enjoyment factor with your new spa. Listed below are some additional items to consider when planning your installation.

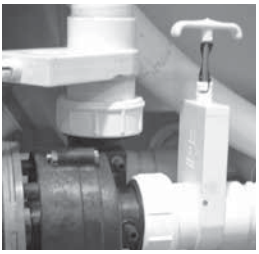
- How spa will complement landscaping and vice versa
- View from inside spa and view of spa from inside of home
- Exposure to sunlight and shading from trees
- Privacy
- Getting to spa from house and return
- Proximity to dressing rooms and bathrooms
- Storage for spa chemicals
- Local building codes (if applicable)
- Power cable

GENERAL CONSIDERATIONS FOR INDOOR INSTALLATION

Installing your spa indoors creates an entirely different set of considerations. With proper planning, no matter what room your spa goes in, it will be your favorite room.

- Work with your Master Spas dealer and contractor to insure all local building, electrical and plumbing codes are met
- Plan for a floor drain to drain off excess water or for draining and cleaning your spa
- A ventilation fan may be necessary due to high humidity created by your spa
- Finished material in your spa room should also be capable of withstanding increased humidity

1. Put spa in final position that allows for access to equipment and spa components.
2. Remove front side panel (This is the side where the main topside control panel is located) so electrical can be hooked up to the spa system pack. Panels are removed by unscrewing the screws in the corner sections and then lifting up the panels out of the retaining tracks.
3. Be sure all pump and heater unions are secure. Each pump has 2 unions and the heater has 2 unions. A newly delivered spa may have loose unions caused in transporting the spa. Check that all slice valves are open, in the up position. The slice valves may become closed during transportation of the spa.



Slice Valve and Pump Union

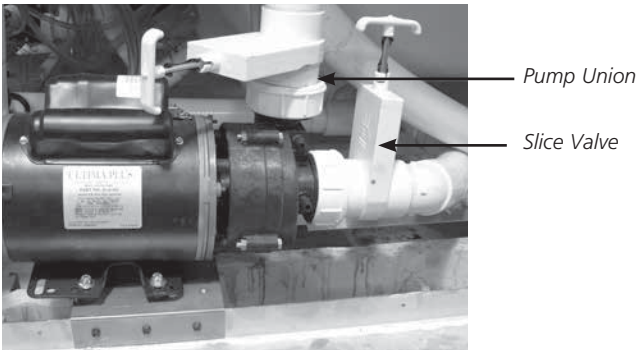
4. Fill spa at least 1" above the filters. We recommend filling the spa through the filter area.
5. Turn the power on to the spa. Spa will go through its priming mode. This lasts approximately 5 minutes.
6. Be sure the jets in your spa are open by turning the face of the jet.

   Note: The Master Blasters are only turned on/off through the use of the "Jets 3" button or the diverter valve (if equipped).

7. It may be necessary to bleed air from the pump(s) on your spa if, after start up, your spa pumps do not operate.

Due to the nature of water flow and hydro-therapy pumps, please be advised that air locking of pumps may occur. Master Spas has taken measures to reduce the possibility of this, but it still may occur, especially after refilling a spa. This is not a service covered under warranty.

To relieve and airlock, loosen the union on the discharge of the pump (see arrow on picture of pump below). Water should leak out. Tighten the union and test the pump for proper jet flow. If needed repeat process.



Airlock

8. Adjust water chemistry according to the instructions provided in the "Water Quality Maintenance Section ".

9. Your spa water will heat approximately 4 -7 degrees per hour. This varies depending on the size of the spa. Step into the soothing waters of your Master Spa!

Relax and enjoy.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

1. **Parts per million, or ppm:** This is a form of measurement used in most pool or spa chemical readings. Best described as any one million like items of equal size and make up, next to one unlike item , but of equal size. This would be one part per million.
2. **Average size spa:** What is it? The national spa and pool institute (NSPI) states; 350 to 400 U.S. gallons is average. As a general rule, chemical dosages are the same for any spa between 100 and 500 U.S. gallons. Spas over 500 U.S. gallons the dosage would be double. Under 100 U.S. gallons would be on a case by case basis.
3. **Total Alkalinity:** This is a measurement of the ability of the water to resist changes in pH. Put another way, it is the water's ability to maintain proper pH. Total alkalinity is measured in parts per million from 0 to 400 plus, with 80 to 150 ppm being the best range for spas. With low alkalinity, the pH will flip, or change back and forth, and be hard to control. With high alkalinity it becomes extremely difficult to change the pH.
4. **pH or potential hydrogen:** This is a measurement of the active acidity in the water, or it is the measurement of the concentration of active hydrogen ions in the water. The greater the concentration of active hydrogen ions, the lower the pH. pH is not measured in parts per million, but on a scale from 0 to 14, with 7 being the neutral. In spas when ever possible, a measurement between 7.2 and 7.8 is best. Whenever possible, it should be between 7.4 and 7.6. With low pH, the results can be corroded metals, etched and stained plaster stained fiberglass or acrylic, eye / skin irritation, rapid chlorine or bromine loss, and total alkalinity destruction. With high pH, the results can be cloudy water, eye / skin irritation, scale formation and poor chlorine or bromine efficiency.
5. **Shocking:** This is when you add either extra chlorine (superchlorinate) by raising the chlorine level above 8 ppm, or add a non-chlorine shock (potassium monoperoxysulfate or potassium monopersulfate) to burn off the chloramines or bromamines. A non-chlorine shock acts by releasing oxygen in the water, which serves the same function as chlorine. The advantage to using non-chlorine shock, is you can enter the water within 15 minutes after shocking. Using chlorine, you must wait until the total chlorine reading is below 5 ppm. One thing to remember, a non-chlorine shock will not kill bacteria or disinfect.
6. **Sequestering:** This can be defined as the ability to form a chemical complex which remains in solution, despite the presence of a precipitating agent (i.e. calcium and metals). Common names for sequestering chemicals are; minquest, stain and scale control, metal-x, spa defender, spa metal gone, (etc.).
7. **Filtration:** Filters are necessary to remove particles of dust, dirt, algae, etc. that are continuously entering the water. If the spa is not operated long enough each day for the filter to do a proper job, this puts a burden on the chemicals, causing extra expense. Filtration time will depend on the spa size, pump and filter size, and of course, bather load. A spare cartridge should be kept on hand to make it easy to frequently clean the cartridge without the need for a long shut down. This will also allow the cartridge to dry out between usages, which will increase the cartridge life span as much as twice. Replace the cartridge when the pleats begin to deteriorate. Cartridge cleaning should be done a minimum of once a month. More often with a heavy bather load.

WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

8. **Sanitizers:** This is what kills the germs and bacteria that enter the water from the environment and the human body.

   A. Chlorine
      1. Only one type is approved for spa use. Sodium dichlor which is granular, fast dissolving and pH neutral chlorine.
      2. Chlorine is an immediate sanitizer.

   B. Bromine (Note: Bromine use is not recommended with Eco Pur filters.)
      1. Two types of tablets.
         a. Hydrotech
         b. Lonza
      2. Bromine is a slow dissolve chemical and may take a few days to develop a reserve or reading in the water.

9. **Total dissolved solids (TDS):** Materials that have been dissolved by the water. i.e. Like what happens when you put sugar in coffee or tea.

10. **Useful life of water (in days):** Water should be drained at least once every 180 days. Useful life may vary by usage and bather load.

11. **Defoamer:** Foaming may be caused by body oils, cosmetics, lotions, surface cleaners, high pH or algeacides as well as other organic materials. Low levels of calcium or sanitizer can also cause foaming. Also, double rinse your bathing suits as they will hold residual soap after being washed.

12. **Calcium hardness:** Water that is too hard (over 250 ppm) can promote scale formation in components and on spa surface. Water that is too low (below 180 ppm) may also shorten the life of metal components on the spa.

    NOTE: Always leave spa cover open for 15 minutes after adding chemicals to prevent the off gas from damaging your spa cover, spa pillows and other critical parts.

THE ADVANTAGES OF ECO PUR™ FILTRATION

Eco Pur™ water filter system is designed to reduce the use of chemicals in your spa. You will still be required, periodically, based on usage to add a small amount of chlorine to oxidize organic compounds in the water. The Eco Pur™ filter system will not eliminate the need to maintain proper water chemistry but can make the maintenance a more natural experience.

FEATURES

- The Eco Pur™ filter system will not oxidize organic compounds and will require periodic doses of chlorine to assist in the sanitization and oxidation processes required to maintain clear spa water.
- Eco Pur™ filter system will not alter the ph of spa water. The Eco Pur™ filter system will actually aid in stabilizing the ph. Eco Pur™ does not alter the (TDS) total dissolved solids.
- The main function of the Eco Pur™ filter system is to provide clean and clear spa water. Proper chemical balance and filtration are also key components in maintaining healthy spa water. Always ensure that the ph and total alkalinity of the spa water is checked and balanced at all times. To ensure proper filtration, clean the regular filter cartridge with a "filter cleaner" every 30 days and rinse the Eco Pur™ cartridge with a hose to remove any buildup of containments. (Do not soak the Eco Pur™ cartridge in filter cleaner.) If water appears to be visually cloudy, dull, or has an odor, shock the spa water with 1 ounce of chlorine* to remove excessive containments. When cleaning filters, be sure to never have the pumps (including the circulation pump) running without the filters in place. Failure to do so may result in debris being drawn into the pumps causing unwarranted damage.
- Helps remove calcium carbonate and hydrogen sulphide from spa water to protect heaters and equipment from precipitation.
- Helps stabilize the pH and alkalinity of the spa water.
- Helps reduce chemical usage and still provide safe odor-free water.
- Helps deplete excess chlorine after chemical shock to prevent damage to skin, hair, and swim wear.
- Helps to produce ultra clean and clear water.

Note: Eco Pur™ filters are not recommended for use with Bromine. Consult your dealer for additional information.

Master Spas, Inc. products are not designed to be used with Biquanides. These chemicals are found in SoftSwim® and Baqua Spa® products. Due to adverse effects from these types of sanitizers, the use of these products may void the spa warranty.

For Eco Pur™ Water Filter System

Step 1: Your spa should be filled using a Pre-filter, which can be obtained from your local dealer. This Pre-filter will help remove many of the minerals existing in the water, which will make adjusting the water balance easier after a new fill. Never use more then 50% softened water when filling the spa.

Step 2: During the initial filling of the spa, add a sequestering agent to combat suspended minerals in the water. The agents are sold under many different names such as Mineral Clear, Stain and Scale, Metal Protect, and other brands. Allow water to circulate and filter for at least 12 hours before adding any other chemicals.

Step 3: Test water for pH, total Alkalinity, and Calcium hardness. The pH should be 7.2 - 7.8 and the total Alkalinity 80-150 PPM. Calcium hardness levels should be maintained between 150 and 250 PPM (part per million).

Step 4: Adjust pH and total Alkalinity (TA) utilizing the directions on the chemical bottles. Wait 15 minutes, test and adjust if necessary.

Step 5: It may be necessary to retest and add additional chemicals to get to the proper levels in Step 3.

Step 6: Add 2 ounces of concentrated chlorinating granules***** (sodium Dichlor-s-triazinetreone) on initial start up to begin sanitizing the spa water. Always refer to the chemical manufactures dosage recommendations listed on the container. It is important not to add the chlorinating granules until the pH, alkalinity and calcium hardness have been adjusted to their proper levels.

*SPECIAL NOTE:

We recommend a minimum level of 1.0 ppm residual chlorine be maintained in spa water. Always refer to the chemical manufacturer's dosage recommendations listed on the container.

When adding chlorine or non-chlorine shock/oxidizer always broadcast across the water while the pumps are running.

The quantities of sanitizer and oxidizer shown in this manual are for 500 gallon spas and may have to be adjusted depending on the actual amount of water that your spa holds. See the specifications section of this manual for the correct gallons of your spa.

The concentration of active ingredients in spa chemicals varies by manufacturer. The amounts of sanitizer suggested in this manual are based on spa chemicals that have the active ingredient percentages listed below:

Chlorine	
Active ingredient:	
Sodium dichlor	99%
Other ingredients	1%
Total	100%

Non-Chlorine Shock/ Oxidizer	
Active ingredient:	
Potassium peroxymonosulfate	42.8%
Inert ingredients	57.2%
Total	100%

WATER QUALITY MAINTENANCE SCHEDULE - ECO PUR™

BEFORE EACH USE

Check spa water with a test strip for proper sanitation levels and adjust accordingly to the proper levels. Free chlorine level should be 1-3 ppm.

ONCE A WEEK

Add 1 ounce of non-chlorine shock/oxidizer***** or chlorine***** to spa to help maintain the water quality.

3 TIMES A WEEK

Test water using chemical test strips. Adjust sanitizer, pH and Alkalinity accordingly. The total alkalinity should be between 80 - 150 ppm and the PH should be between 7.2 - 7.8.

ONCE A MONTH

Soak your regular filter elements overnight in a container with spa Filter Cleaner and then rinse with clean water. For best results, allow the filter to dry before re-inserting. (The Eco Pur™ mineral element should never be cleaned in a filter cleaner. Just rinse with water.) When cleaning filters, be sure to never have the pumps (including the circulation pump) running without the filters in place. Failure to do so may result in debris being drawn into the pumps causing unwarranted damage. See the "clean your filter elements" in the maintenance section of this manual for more information.

EVERY 180 DAYS

Drain and refill your spa with fresh water, install a new Eco Pur™ filter element, clean the regular filter, and repeat start up procedure. The regular filter should be replaced at least once every year.

AFTER EACH USE

Add 1 ounce of non-chlorine shock/oxidizer***** or 1/2 ounce of chlorine***** to the spa water.

*SPECIAL NOTE:

We recommend a minimum level of 1.0 ppm residual chlorine be maintained in spa water. Always refer to the chemical manufacturer's dosage recommendations listed on the container.

When adding chlorine or non-chlorine shock/oxidizer always broadcast across the water while the pumps are running.

The quantities of sanitizer and non-chlorine oxidizer shown in this manual are for 500 gallon spas and may have to be adjusted depending on the actual amount of water that your spa holds. See the specifications section of this manual for the correct gallons of your spa.

The concentration of active ingredients in spa chemicals varies by manufacturer. The amounts of sanitizer suggested in this manual are based on spa chemicals that have the active ingredient percentages listed below:

Chlorine	
Active ingredient:	
Sodium dichlor	99%
Other ingredients	1%
Total	100%

Non-Chlorine Shock/ Oxidizer	
Active ingredient:	
Potassium peroxymonosulfate	42.8%
Inert ingredients	57.2%
Total	100%

AS NEEDED

If water looks hazy, check PH and Total Alkilinity, and treat with 1 ounce of chlorine*****. Always refer to the chemical manufactures dosage recommendations listed on the container.

These are general recommendations for water quality maintenance that may vary by usage and or bather load. Depending on bather load and frequency of use, drain and refill times may vary as well as the frequency of cleaning your filters.

A defoamer may be used when excessive foaming occurs. Over use of a defoamer will result in cloudy, milky water.

USE ONLY SPA CHEMICALS

Do not use chemicals designed for use in swimming pools.

With a spa you are working with a small volume of hot water compared to a large volume of relatively cool water in a swimming pool. Because of this chemicals will have a shorted life span and bacteria can grow more quickly than in a swimming pool. A spa is less forgiving then a pool and requires that whatever is put into it have a pH as close to neutral as possible. That is why only chemicals made for spas should be used. Always refer to the chemical manufactures dosage recommendations listed on the container.

*SPECIAL NOTE:

We recommend a minimum level of 1.0 ppm residual chlorine be maintained in spa water. Always refer to the chemical manufacturer's dosage recommendations listed on the container.

When adding chlorine or non-chlorine shock/oxidizer always broadcast across the water while the pumps are running.

The quantities of sanitizer and oxidizer shown in this manual are for 500 gallon spas and may have to be adjusted depending on the actual amount of water that your spa holds. See the specifications section of this manual for the correct gallons of your spa.

The concentration of active ingredients in spa chemicals varies by manufacturer. The amounts of sanitizer suggested in this manual are based on spa chemicals that have the active ingredient percentages listed below:

Chlorine	
Active ingredient:	
Sodium dichlor	99%
Other ingredients	1%
Total	100%

Non-Chlorine Shock/ Oxidizer	
Active ingredient:	
Potassium peroxymonosulfate	42.8%
Inert ingredients	57.2%
Total	100%

SPA WATER MAINTENANCE TROUBLE-SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES	HOW TO FIX IT
Chlorine / Bromine Odor	• Excessive Chlorine or bromine levels	• Shock water with non-chlorine shock treatment
	• Low pH	• Adjust pH if necessary
Water Odor	• Low levels of sanitizer	• Shock water with non-chlorine shock treatment or adjust sanitizer levels
	• pH out of range	• Adjust pH level if necessary
	• Bacteria or algae growth	• Adjust sanitizer if necessary
Cloudy Water	• Dirty filters or inadequate filtration	• Clean filters and adjust filtration times
	• Water chemistry not balanced	• Adjust chemistry levels
	• Suspended particles or organic materials	• Add spa clarifier (see dealer)
	• Old water	• Change spa water
Scum Ring Around Spa	• Build up of oils, dirt and organic elements	• Wipe off with a clean towel add an enzyme product.
Eye / Skin Irritation	• Unsanitary water	• Shock spa with non-chlorine shock
	• Free chlorine level above 5 ppm	• Allow level to drop below 5 ppm
	• Poor sanitizer / pH levels	• Adjust according to spa test strip results
Foaming	• High levels of body oils, lotions, soap, etc.	• Add small amount of defoamer

RECOMMENDED LEVELS OF CHEMICAL

Chlorine 1.0 - 3.0 ppm

pH 7.2 - 7.8

Total Alkalinity 80 - 150 ppm

Calcium Hardness 180 - 250 ppm

WHY ARE CHEMICALS IMPORTANT IN A SPA

1. Evaporation:

As water evaporates, only pure water evaporates, leaving the salts, minerals, metals, and any unused chemicals behind. Adding water adds more salts, minerals, and metals. In time, the water can become saturated with these dissolved solids and can cause stains or scale to form on the walls of the spa or a scale build up inside the equipment. Colored or cloudy water, and possible corrosion of plumbing and fittings may also occur.

2. Heat:

Heat causes much quicker evaporation and also will cause minerals and metals to precipitate out of solution.

3. Air:

Dust and airborne dirt particles are introduced into the spa.

4. Environment:

The environment surrounding the spa can also impact the water quality. Items such as pollen, grass, sand, dirt, lawn fertilizer, airborne dust, insects, leaves, and pets can all affect the water quality of the spa.

Remember:
The maintenance routines set forth in this manual may need to be adjusted depending on how much the spa is being used.

MAINTENANCE RECOMMENDATIONS

Your spa requires periodic draining and cleaning to ensure a safe, healthy environment. It is recommended that you clean your spa at least every 180 days. Heavy bather load will require cleaning it more often.

DRAIN YOUR SPA

• See page 13.

CLEAN YOUR SPA SURFACE

- With a soft cloth, wipe down the spa surface with a non-abrasive spa surface cleaner that may be purchased through your local spa dealer. Do not use paper towels. Be sure to rinse residue from spa surface.
- If your spa has developed an oily or chalky residue at the waterline it may require special treatment. Consult your dealer.

REFILL YOUR SPA

- Be sure to close the drain valve.
- Fill the spa with water and be sure that water level is above the skimmer opening at the minimum safe water level sticker.
- Refer to the start-up section for specific instructions.

CLEAN YOUR FILTER ELEMENTS (also reference page 62)

The filter elements are one of the most important components of your spa. Not only are they essential for clean water, but they also extend the life of the spa equipment. Your filter elements should be cleaned on a regular basis, once a month on average with normal usage. With heavy use the filters may need to be cleaned more often.

- Turn off the spa before servicing filters. Never leave to the spa running when removing the filters. Debris can be pulled into the plumbing system and cause unwarranted damage.
- Remove filter element(s).
- With a garden hose, spray each element under pressure. Periodically, the elements need to be soaked in a filter cleaner compound. Check with your dealer for details on cleaning and/or filter replacement recommendations.
- Replace filter elements.
- Be sure water level is adequate.
- Turn spa on.
- Only clean the ECO PUR filter element with water, do not use chemical cleaners.

CARE OF YOUR SPA PILLOWS

- Your spa pillows need to be rinsed periodically to remove any chemical residue. This should help to eliminate pillows becoming stiff and discolored.
- If spa is not to be used for a period of time, pillows should be removed. Pillow life will be extended.

NOTE: Do not cover the spa for 15 minutes after adding chemicals as the off gas can cause unwarranted damage.

STAINLESS STEEL

Master Spas uses stainless steel in a number of our spas. Its lasting beauty and resistance to corrosion make it an excellent material for handrails and jets faces.

With the proper care it will keep its luster for many years. All stainless steel can corrode given the right circumstances so we have provided a guide to help you keep the stainless components in your spa looking nice.

Stainless steel derives its ability to resist corrosion by forming a very thin transparent coating on the surface when exposed to oxygen. This coating can be damaged by abrasive materials such as steel wool, sand paper, and other cleaning materials that are abrasive. Chlorine salts, sulfides, or other rusting metals can also erode this thin coating exposing the metal to corrosion.

The best defense to combat corrosion on stainless steel components in your spa is make sure that it is kept clean and free of any chemical build up.

Always:

- Clean frequently with clear clean water.
- Remove any rust spots as soon as they appear with vinegar or a brass, silver, or chrome cleaner.
- Use a good car cleaning wax for extra protection.

Never:

- Clean with mineral acids or bleaches.
- Clean with steel wool or any other abrasive material.
- Leave in contact with iron, steel any other metals.

NOTE: Failure to take proper care of the stainless steel fixture could result with them rusting. Rusting is not covered by the warranty.

NOTE: Do not cover the spa for 15 minutes after adding chemicals as the off gas can cause unwarranted damage.

WINTERIZING YOUR SPA

Many people find they enjoy using their spa more in the winter than any other time. Your spa is designed to be used year round in any type of climate.

*However, if you decide you don't want to use your spa in the winter, you must drain it and follow the winterizing steps listed below:

1. Drain your spa completely using the drain valve (see "To Drain Your Spa") or use an inexpensive submersible pump that you can buy from your dealer or your local hardware store.
2. Use a shop vac to get all standing water out of your unit.
3. Remove access panels from equipment area.
4. Loosen all pump unions
5. Remove winterizing plug from face of the pump(s) where applicable.
6. Using your shop vac in a blowing mode, insert the hose into the nozzle of each jet and blow the trapped water from the lines into the interior of the spa.
7. After this is completed, use the shop vac to remove any standing water in the spa and in the equipment area.
8. Clean the spa with a soft cloth and a non-abrasive spa surface cleaner.
9. Replace access panels.
10. Cover spa to prevent water from entering the spa.

**Disclaimer: Master Spas does not recommend winterizing your spa. If you choose to do so, any damage that may result is not covered under the spa warranty.*

MASTER SPA - LSX SERIES - SPECIFICATIONS

	Spa Dimensions	Electrical Requirements	Water Capacity (gallons)	Weight Dry/Full (lbs.)	Number of Pumps	Jet Count	Control System
LSX 700	84"x 84"x 38"	240V, 50 Amp	335	785 / 3,732	4	62	MS 40E
LSX 800	94"x 94"x 38"	240V, 50 Amp	415	835 / 4,280	4	70	MS 40E
LSX 900	94"x 120"x 38"	240V, 50 Amp	530	960 / 5,359	4	72	MS 40E

THE MAIN SCREEN

SPA STATUS

Important information about spa operation can be seen quickly from the Main Screen.

The most important features, including Set Temperature adjustment, can be accessed from this screen.

The actual water temperature can be seen in large text and the desired, or Set Temperature, can be selected and adjusted.

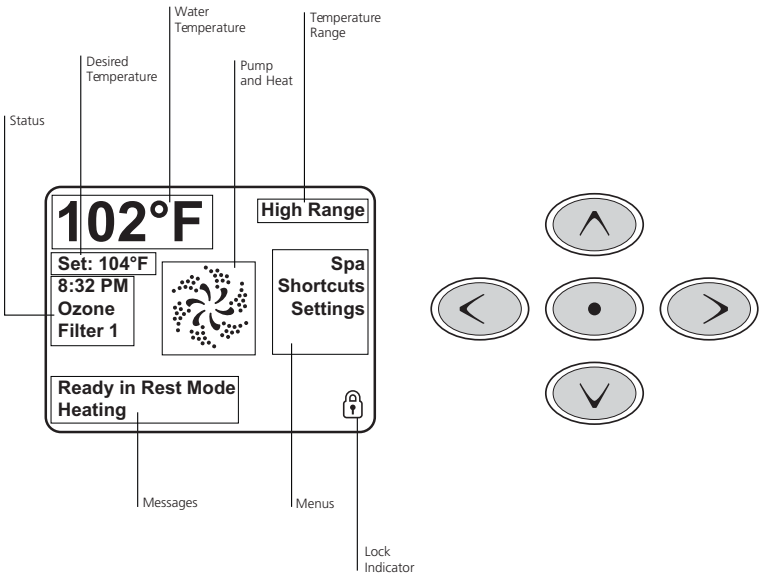
Time-of-day, Ozone operation and Filter Operation status is available, along with other messages and alerts.

High Temperature Range vs. Low Temperature Range is indicated in the upper right corner.

The Jets Icon in the center will indicate when a pump is running and also the heater function.

A Lock icon is visible if the panel or settings are locked.

The Menu choices on the right can be selected and the screen will change to show more detailed controls or programming functions.



NAVIGATION

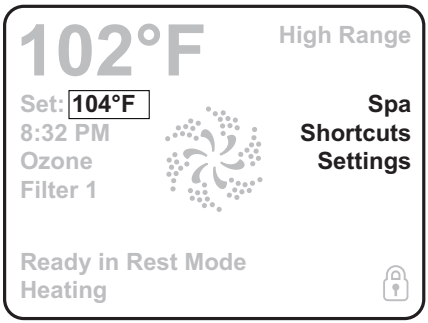
Navigating the entire menu structure is done with the 5 buttons on the control panel.

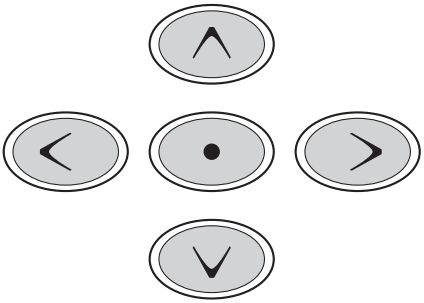
When a text item changes to white during navigation, that indicates the item is selected for action.

Operating or changing a selected item is generally done with the center or "Select" button.

The only item that can be changed on the left side of the Main Screen is the Set Temperature. Press the Left Arrow button to change the Set Temperature number to white. The Set Temperature can then be adjusted with the up and down buttons. Pressing the Select button or the Right Arrow button will save the new set temperature.

On the right side of the screen, the menu selections can be selected with the Up and Down Buttons. Use the Select Button to choose an item. Selecting one of these items will change to a different screen with additional controls.





MESSAGES

At the bottom of the screen, messages may appear at various times. Some of these messages must be dismissed by the user See "General Messages" section.

PRESS-AND-HOLD

If an Up or Down button is pressed and held when the Set Temperature is selected, the temperature will continue to change until the button is released, or the Temperature Range limits are reached.

ALL EQUIPMENT ACCESS

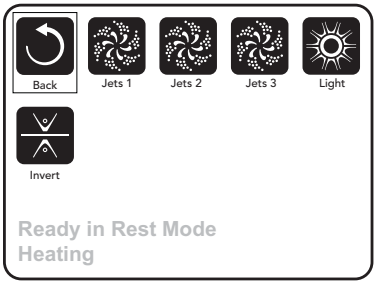
The Spa Screen shows all available equipment to control, as well as other features, like Invert, in one easy-to-navigate screen. The display shows icons that are related to the equipment installed on a particular spa model, so this screen may change depending on the installation.

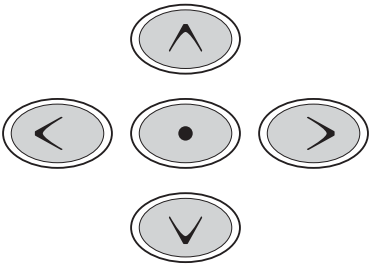
The navigation buttons are used to select an individual device. The device that is chosen is highlighted with a white outline and the text under the icon changes to white. Once a device is selected, it can be controlled using the center Select Button.

Some devices, like pumps, may have more than one ON state, so the icon will change to reflect the state that the equipment is in. Below are some examples of 2-speed Pump indicators.

If the Spa has a 24 hour Circ Pump, a Circ Pump Icon will appear to indicate its activity, but outside of Priming Mode, the 24 hour Circ Pump cannot be controlled directly.

NOTE: The icon for the 24 hour pump that is associated with the heater will have a red glow in the center when the heater is running.

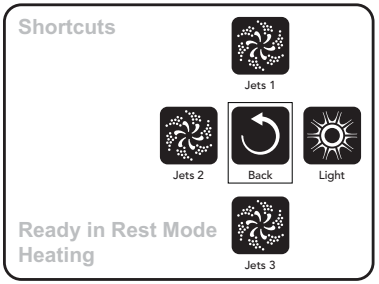


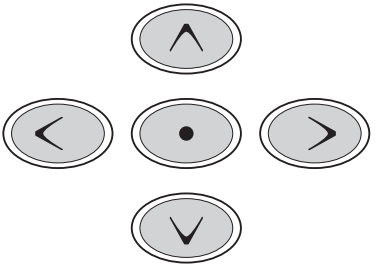


ONE-PRESS ACTIVATION

The Shortcut Screen requires no navigation. Each button is fixed on a specific function and can be used as a very simple user interface for the spa.

Each button function is illustrated in the display.





PRESSING A "BUTTON"

When instructions are given to "press a button" any of the following can be done:

- Navigate to the desired item on any Screen. When the desired item is highlighted, press the Select Button.
- Press the button for that device while on the Shortcuts Screen, if the device is one of the 4 functions available.

PROGRAMMING, ETC.

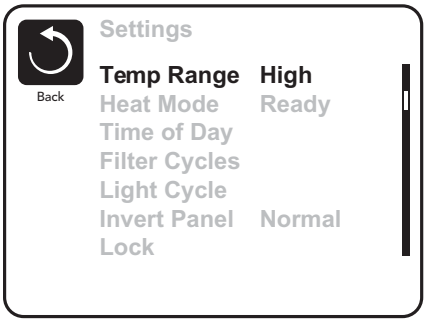
The Settings Screen is where all programming and other spa behaviors are controlled.

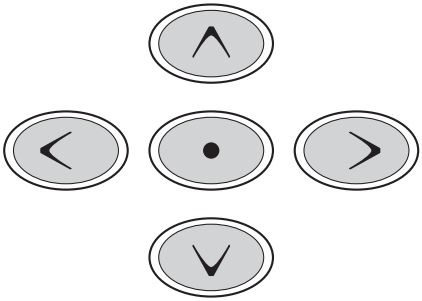
This screen has several features that can be acted on directly. These features include Temp Range, Heat Mode, and Invert Panel. When one of these items is highlighted, the Select Button is used to toggle between two settings.

All other menu items (with an arrow pointing to the right) go to another level in the menu.

PRESS-AND-HOLD

If an Up or Down button is pressed and held when an item in a Menu List is highlighted, the list can be scrolled quickly from top to bottom. The scroll bar on the right side of the screen indicates the relative position of the highlighted item in the list.





DUAL TEMPERATURE RANGES (HIGH VS. LOW)

This system incorporates two temperature range settings with independent set temperatures. The specific range can be selected on the Settings screen and is visible on the Main Screen in the upper right corner of the display.

These ranges can be used for various reasons, with a common use being a "ready to use" setting vs. a "vacation" setting. Each range maintains its own set temperature as programmed by the user. This way, when a range is chosen, the spa will heat to the set temperature associated with that range.

High Range can be set between 80°F and 104°F.

Low Range can be set between 50°F and 99°F.

Freeze Protection is active in either range.

HEAT MODE – READY VS. REST

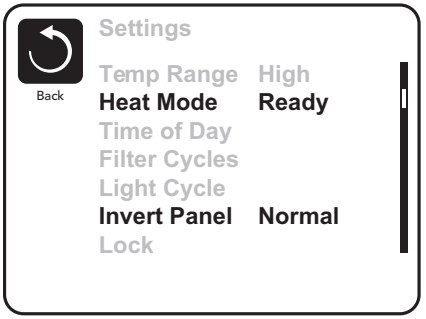
In order for the spa to heat, a pump needs to circulate water through the heater. The pump that performs this function is known as the "24 hour Circ."

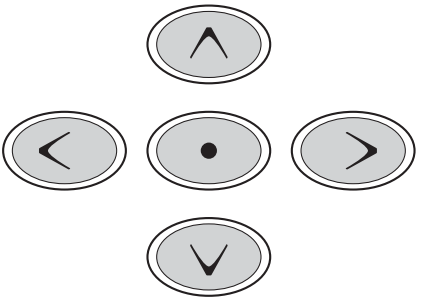
REST Mode will only allow heating during programmed filter cycles.

Circulation Mode See "Spa Behavior" section.

The heater pump generally runs continuously. Since the heater pump is always running, the spa will maintain set temperature and heat as needed in Ready Mode, without polling.

In Rest Mode, the spa will only heat to set temperature during programmed filter times, even though the water is being filtered constantly when in Circulation Mode.





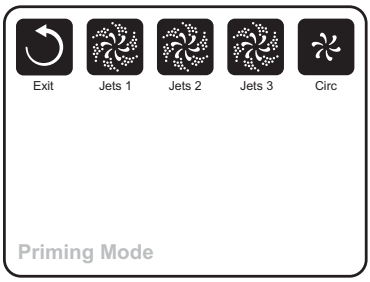
READY-IN-REST MODE

READY/REST appears in the display if the spa is in Rest Mode and the Jets 1 Button is pressed. It is assumed that the spa is being used and will heat to set temperature. After 1 hour, the System will revert to Rest Mode. This mode can also be reset by entering the Settings Menu and changing the Heat Mode.

PREPARATION AND FILLING

Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

After turning the power on at the main power panel, the top-side panel will display a splash, or startup screen.



PRIMING MODE

After the initial start-up sequence, the control will enter Priming Mode and display a Priming Mode screen. Only pump icons appear on the priming mode screen. The system will automatically return to normal heating and filtering at the end of the priming mode, which lasts 4-5 minutes. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on automatically, but the pump(s) can be energized by selecting the "Jet" buttons. The 24 hour Circ Pump can be activated by pressing the dedicated "Light" button during Priming Mode.

Manually exit Priming Mode by pressing the "Exit" Button.

PRIMING THE PUMPS

As soon as the Priming Mode screeen appears on the panel, select the "Jets 1" button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, select the other pumps, to turn them on. The pumps should be running in high-speed to facilitate priming. If the pumps have not primed after 2 minutes, and water is not flowing from the jets in the spa, do not allow the pumps to continue to run. Turn off the pumps and repeat the process. Note: Turning the power off and back on again will initiate a new pump priming session. Sometimes momentarily turning the pump off and on will help it to prime. Do not do this more than 5 times. If the pump(s) will not prime, shut off the power to the spa and call for service.

Important: A pump should not be allowed to run without priming for more than 2 minutes. Under NO circumstances should a pump be allowed to run without priming beyond the end of the 4-5 minute priming mode. Doing so may cause damage to the pump and cause the system to energize the heater and go into an overheat condition.

EXITING PRIMING MODE

You can manually exit Priming Mode by navigating to the "Back" button on the Priming Mode Screen. Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pump(s) have been primed by this time.

Once the system has exited Priming Mode, the top-side panel will display the Main Screen, but the display will not show the temperature yet, as shown below. This is because the system requires approximately 1 minute of water flowing through the heater to determine the water temperature and display it.

– – –°F– – –°C

PUMPS

On the Spa Screen, select a "Jets" button once to turn the pump on or off, and to shift between low- and high-speeds if equipped. If left running, the pump will turn off after a time-out period. The pump 1 low-speed will time out after 30 minutes. The high-speed will time-out after 15 minutes.

CIRCULATION PUMP MODES

1. The 24 hour circ pump operates continuously with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).

FILTRATION AND OZONE

The system is factory-programmed with one filter cycle that will run in the evening (assuming the time-of-day is properly set) when energy rates are often lower. The filter time and duration are programmable. See Adjusting Filtration" section. A second filter cycle can be enabled as needed.

At the start of each filter cycle, the pumps will run briefly to purge the plumbing to maintain good water quality. On spas equipped with 24 hour circulation systems the filter cycles cannot be set. (See adjusting filtration section).

FREEZE PROTECTION

If the temperature sensors within the heater detect a low enough temperature, then the pumps automatically activate to provide freeze protection. The pumps will run either continuously or periodically depending on conditions. If the temperature sensors detect a drop to below 44°F/6.7°C within the heater, the pump will automatically activate to provide freeze protection. The equipment stays on until 4 minutes after the sensors detect that the spa temperature has risen to 45°F/7.2°C or higher. During freeze protection the heater will not be activated.

CLEAN-UP CYCLE

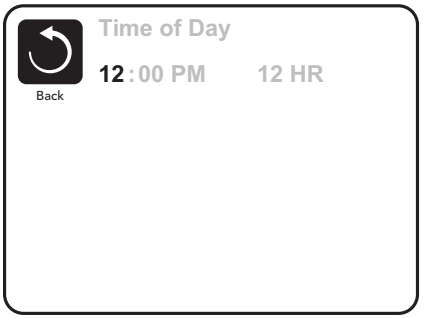
When a pump is turned on by a button press, a clean-up cycle begins 30 minutes after the pump is turned off or times out. The pump and the ozone generator will run for 30 minutes or more, depending on the system. This setting can be changed. See "Preferences" section.

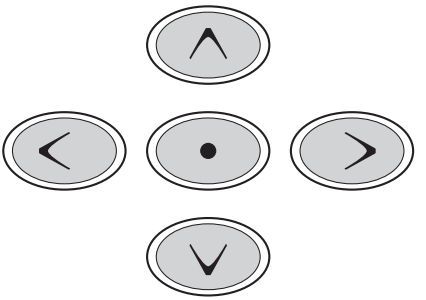
BE SURE TO SET THE TIME-OF-DAY

Setting the time-of-day is important for determining filtration times and other background features.

"Set Time" will appear on the display if no time-of-day is set in the memory.

On the Settings Screen, select the Time-of-Day line. On the Time-of-Day screen, simply navigate right and left to select the Hour, Minutes, AM/PM and 12/24 Hour segments. Use the Up and Down Buttons to make changes.

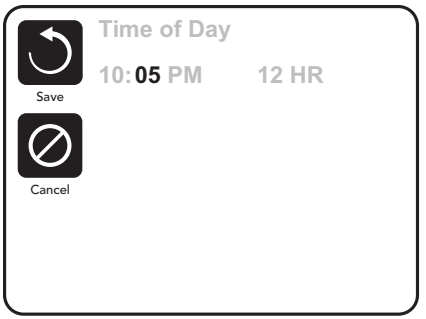


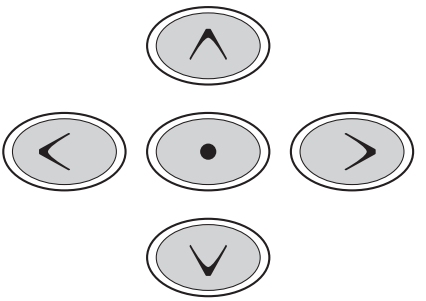


SAVING SETTINGS

The Time-of-Day screen is a simple, editable screen that illustrates a feature of the control that applies to all other editable screens as well.

When changes are made, the icon to go "Back" changes to "Save" and a new icon for "Cancel" appears under the Save icon. Navigating to the left will highlight the Save icon, and navigating down from there will allow the user to cancel the pending change. Pressing the "Select" button will save or cancel the changes and go back to the previous screen.





NOTE:

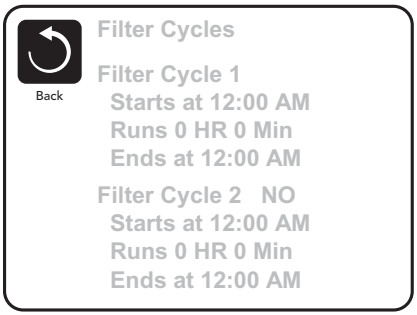
If power is interrupted to the system, Time-of-Day will be maintained for several days.

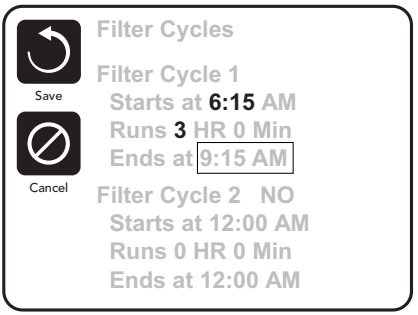
NOTE:
On spas that are equipped with a 24 hour circulation system the filter cycles are disabled. The water is filtered 24 hours a day so a filtration cycle is not necessary. The energy efficiency of the spa is also enhanced by disabling the filtration cycles. Although the filtration settings screens will still be visible they will not have any effect on filtration cycles.

On spas that are not equipped with 24 hour circulation systems the filtration settings will set times for the #1 jet pump to run on low speed for filtration.

MAIN FILTRATION

Using the same navigation and adjustment as Setting the Time, Filter Cycles are set using a start time and a duration. Each setting can be adjusted in 15-minute increments. The panel calculates the end time and displays it automatically.





FILTER CYCLE 2 - OPTIONAL FILTRATION

Filter Cycle 2 is OFF by default.

Simply navigate to the Filter Cycle 2 line by pressing the Right Navigation Button, and when "NO" is highlighted, press Up or Down to toggle Filter Cycle 2 on and off. When Filter Cycle 2 is ON, it can be adjusted in the same manner as Filter Cycle 1 by navigating to the right.

It is possible to overlap Filter Cycle 1 and Filter Cycle 2, which will shorten overall filtration by the overlap amount.

CIRCULATION PUMP MODES

The 24 Circ Pump is programmed to operate continuously.

PURGE CYCLES

In order to maintain sanitary conditions, as well as protect against freezing, will purge water from their respective plumbing by running briefly at the beginning of each filter cycle. The spa will always initiate purge cycles whether it is equipped with a 24 hour circulation system or not to insure that water is purged from the plumbing lines.

If the Filter Cycle 1 duration is set for 24 hours, enabling Filter Cycle 2 will initiate a purge when Filter Cycle 2 is programmed to begin.

ADDITIONAL SETTINGS

INVERT PANEL

Selecting Invert Panel will flip the display and the buttons so the panel can be easily operated from inside or outside the hot tub.

DEDICATED BUTTONS

SPECIFIC BUTTONS FOR SPECIFIC DEVICES

The panel has dedicated function buttons installed, pressing those buttons will activate the device indicated for that button.

These dedicated buttons will operate just like the Spa Screen buttons (See "Spa Screen and Shortcut screen" section.) and the equipment will behave in the same manner with each button press.

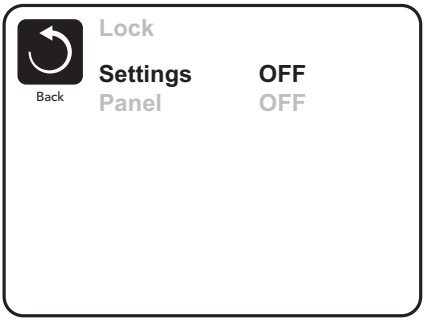
RESTRICTING OPERATION

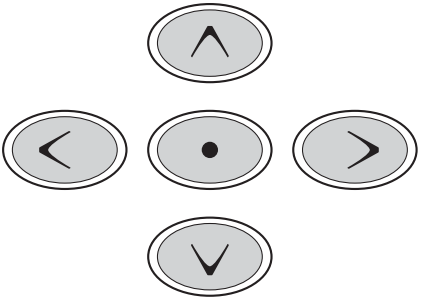
The control can be restricted to prevent unwanted use or temperature adjustments.

Locking the Panel prevents the controller from being used, but all automatic functions are still active.

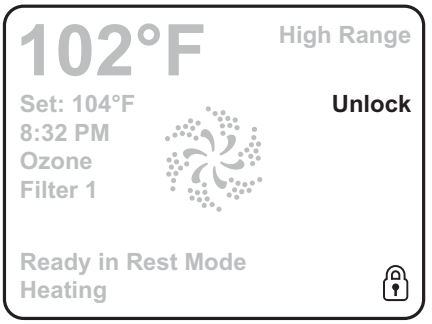
Locking the Settings allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

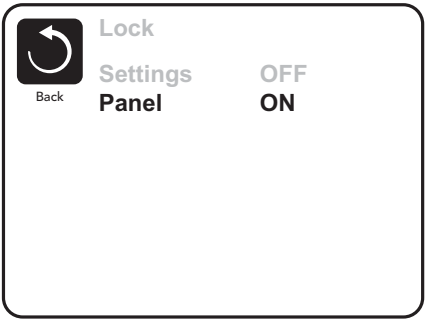
Settings Lock allows access to a reduced selection of menu items. These include Set Temperature, Invert, Lock, Utilities, Information and Fault Log. They can be seen, but not changed or edited.



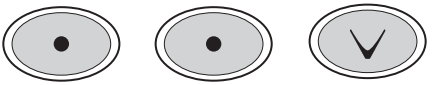


UNLOCKING





An Unlock Sequence using the navigation buttons can be used from the Lock Screen. The Unlock Sequence is the same for both Panel Lock and Settings Lock.



HOLD MODE

Hold Mode is used to disable the pumps during service functions like cleaning or replacing the filter. Hold Mode will last for 1 hour unless the mode is exited manually. If spa service will require more than an hour, it may be best to simply shut down power to the spa.

UTILITIES

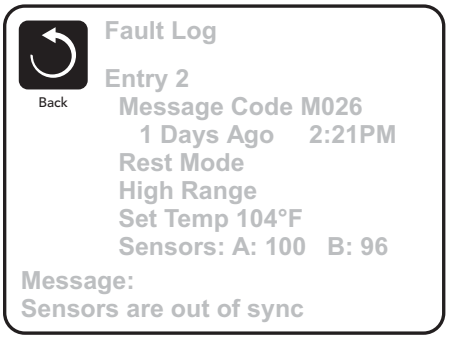
The Utilities Menu contains the following:

A/B Temps

When this is set to On, the temperature display will alternate to display temperature from Sensor A and Sensor B in the heater.

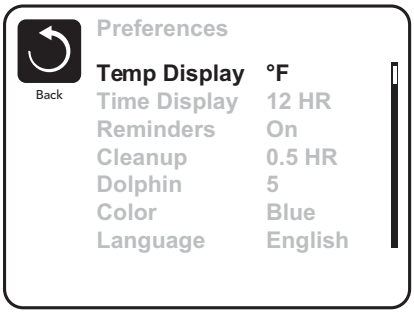
Fault Log

The Fault Log is a record of the last 24 faults that can be reviewed by a service tech.



PREFERENCES

The Preferences Menu allows the user to change certain parameters based on personal preference.



Temp Display
Change the temperature between Fahrenheit and Celsius.

Time Display
Change the clock between 12 hr and 24 hr display.

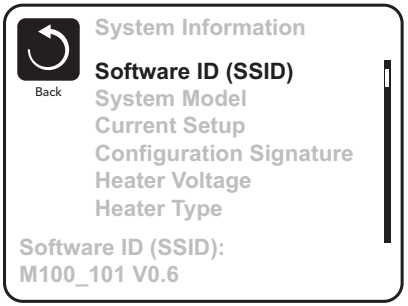
Cleanup
Cleanup Cycle Duration default is 30 minutes. The duration can be set in 30 minute increments for up to 4 hours. The #1 jet pump will run for the time duration set 30 minutes after any of the jets pumps have been activated.

Color
Pressing the Select Button when Color is highlighted will cycle through 5 background colors available in the control.

Language
Change the language displayed on the panel.

SYSTEM INFORMATION

The System Information Menu displays various settings and identification of the particular system. As each item in the menu is highlighted, the detail for that item is displayed at the bottom of the screen. These settings are for information only and cannot be changed.



Software ID (SSID)
Displays the software ID number for the System.

System Model
Displays the Model Number of the System.

Current Setup
Displays the currently selected Configuration Setup Number.

Configuration Signature
Displays the checksum for the system configuration file.

Heater Voltage (Feature not used on CE rated systems.)
Displays the operating voltage configured for the heater.

Heater Wattage as Configured in Software (CE Systems Only.)
Displays a heater kilowatt rating as programmed into the control system software (1-3 or 3-6).

Heater Type
Displays a heater type ID number.

Dip Switch Settings
Displays a number that represents the DIP switch positions of S1 on the main circuit board.

Panel Version
Displays a number of the software in the topside control panel.

GENERAL MESSAGES

Most messages and alerts will appear at the bottom of the normally used screens.
Several alerts and messages may be displayed in a sequence.

Some messages can be reset from the panel. Messages that can be reset will appear with a "right arrow" at the end of the message. This message can be selected by navigating to it at pressing the Select button.

– – –°F– – –°C

WATER TEMPERATURE IS UNKNOWN

After the pump has been running for 1 minute, the temperature will be displayed.

POSSIBLE FREEZING CONDITION

A potential freeze condition has been detected. All pumps are activated.

In some cases, pumps may turn on and off and the heater may operate during Freeze Protection.

This is an operational message, not an error indication.

THE WATER IS TOO HOT

The system has detected a spa water temp of 110°F (43.3°C) or more, and spa functions are disabled. System will auto reset when the spa water temp is below 108°F (42.2°C). Check for extended pump operation or
high ambient temp.

* This message can be reset from the topside panel.

HEATER-RELATED MESSAGES

THE WATER FLOW IS LOW

There may not be enough water flow through the heater to carry the heat away from the heating element. Heater start up will begin again after about 1 min. See "Flow Related Checks" below.

THE WATER FLOW HAS FAILED*

There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See "Flow Related Checks" below. After the problem has been resolved, you must press any button to reset and begin heater start up.

THE HEATER MAY BE DRY*

Possible dry heater, or not enough water in the heater to start it. The spa is shut down for 15 min. Press any button to reset the heater start-up. See "Flow Related Checks" below.

THE HEATER IS DRY*

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must clear the message to restart heater start up. See "Flow Related Checks" below.

THE HEATER IS TOO HOT*

One of the water temp sensors has detected 118°f (47.8°C) in the heater and the spa is shut down. You must clear the message when water is below 108°f (42.2°C). See "Flow Related Checks" below.

FLOW-RELATED CHECKS

Check for low water level, clogged filters, suction flow restrictions, closed valves, trapped air, too many closed jets and pump prime.

On some systems, even when spa is shut down by an error condition, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

* This message can be reset from the topside panel.

SENSOR-RELATED MESSAGES

SENSORS ARE OUT OF SYNC
The temperature sensors MAY be out of sync by 2°F or 3°F. Call for Service.

SENSORS ARE OUT OF SYNC -- CALL FOR SERVICE*
The temperature sensors ARE out of sync. The fault above has been established for at least 1 hour. Call for Service.

SENSOR A FAULT, SENOR B FAULT
A temperature sensor or sensor circuit has failed. Call for Service.

MISCELLANEOUS MESSAGES

COMMUNICATIONS ERROR
The control panel is not receiving communication from the System. Call for Service.

TEST SOFTWARE INSTALLED
The Control System is operating with test software. Call for Service.

°F OR °C IS REPLACED BY °T
The Control System is in Test Mode. Call for Service.

* This message can be reset from the topside panel.

SYSTEM-RELATED MESSAGES

PROGRAM MEMORY FAILURE*
At Power-Up, the system has failed the Program Checksum Test. This indicates a problem with the firmware (operation program) and requires a service call.

THE SETTINGS HAVE BEEN RESET (PERSISTENT MEMORY ERROR)*
Contact your dealer or service organization if this message appears on more than one power-up.

THE CLOCK HAS FAILED*
Contact your dealer or service organization.

CONFIGURATION ERROR (SPA WILL NOT START UP)
Contact your dealer or service organization.

A PUMP MAY BE STUCK ON
Water may be overheated. POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.

HOT FAULT
A Pump Appears to have been Stuck ON when spa was last powered

POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.

* This message can be reset from the topside panel.

DELUXE FUSION AUDIO SYSTEM

Warning: Never remain in your spa longer than 15 minutes per session when the water temperature is above 98˚F. If you wish to spend more time in your spa, whether enjoying music, or just lounging, be sure to keep the spa water at or below body temperature (98.6˚F).

**Please refer to your stereo Owner's Manual for specific operations.*

Optional Stereo Docking Station

Your spa is equipped with an iPod™ docking station that will allow you to listen to personal selections through the audio system of the spa. This audio system also has an FM only radio receiver that can be used to listen to local FM broadcasts. Due to varying signal conditions the FM radio reception may be limited.

The docking station is compatible with most iPod™ products. Master Spas, Inc. does not guarantee compatibility with all iPod™ products due to software changes and upgrades.

The wireless remote provided with the spa is water resistant, but should never be left in the spa when not in use.

Power On

To activate the Digital Media Locker™, press the on/off button, standby mode will be indicated by a red LED. ON mode will be indicated by a blue LED. When the unit is in the standby position the red LED will be lit.

Remote Synchronizing

Press and hold MODE button on the remote. The display will then show "pair". Keep pressing this key. Then press the power button on the locker from off(no light) to standby (red light)to pair with the locker. If the pairing is successful it will show "welcome" and the LED on the locker will turn blue. If pair is not successful. Please repeat the step above.

Each Digital Media Locker™ comes with a matching RF (Radio Frequency) Wireless LCD Remote control. This remote is required use any functions on the unit.For any additional remote controls, you will need to activate/Synchronize those remote controls to the main unit by following the steps above.

The remote control uses state-of-the-art technology and will inform you if the dock is receiving the command from the remote control. In any case,if the LCD displays "NO LINK" this means that your Locker is off or remote control is out of reception range.

Each Digital Media Locker™ comes with a matching RF (Radio Frequency) Wireless LCD remote control. This remote is required to use any functions on the unit. For any additional remote controls you will need to activate/synchronize those remote controls to the stereo by following the steps above.

If you lose your remote control and buy a replacement, follow the steps above to pair/synchronize before normal usage.

Buttons		Music Mode	FM Radio Mode
Power	⏻	Press once: toggle from Operation mode to Standby mode or vise versa.	
12V trigger /Random	⚡	Press once: random function Press and hold: Toggle external power	Press once: No function. Press and hold: Toggle external power
Volume up	+	Press once: Volume UP a value Press and hold: Fast volume up	Press once: Volume UP a value Press and hold: Fast volume up
Volume down	−	Press once: Volume DOWN a value Press and hold: Fast volume down	Press once: Volume DOWN a value Press and hold: Fast volume down
Mode	MODE	Press once: Change the source. Press and hold: Pair	Press once: Change the source. Press and hold: Pair
Audio	AUDIO	Press once: Enter BAL-FAD-DSP-LOUD-VOL	Press once: Enter BAS-TRE-BAL-FAD-DSP -AREA-LOUD-DX-STEREO-VOL.
1/DIR-	1	Press once: back to previous folder. Press and hold: back to previous folder.	Press once: Listen to the station which in the No. 1 Press and hold: stored a station into No. 1.
2/Repeat	2	Press once: repeat function. Press and hold: repeat function.	Press once: Listen to the station which in the No. 2 Press and hold: stored a station into No. 2.
3/DIR+	3	Press once: to next folder. Press and hold: to next folder.	Press once: Listen to the station which in the No. 3 Press and hold: stored a station into No. 3.
Fast Rewind	⏮	Press once: Last track Press and hold: Fast Rewind	Press once: seek down Press and hold: change to manual scanning
Pause/ Play	⏯	Press once:Play/Pause Press and hold:Play/Pause	Press once: toggle mute Press and hold: toggle mute
Fast Forward	⏭	Press once: Next track Press and hold: Fast Forward	Press once: seek up. Press and hold: change to manual scanning

- If your music player is not an ipod, you will not be able to control track or recieve track information
- In order to prolong remote battery life the LCD will shut off in 20 seconds if no other button is pressed. To turn remote back on press any key once and then press the command desired.
- Shut off DSP to access control of Bass and Treble control

CAUTION – Risk of Electric Shock. Do not leave compartment door open.

CAUTION – Risk of Electric Shock. Replace components only with identical components; and

Do not operate the Audio / Video controls while inside the spa.

WARNING – Prevent Electrocution. Do not connect any auxiliary components (for example cable, additional speakers, headphones, additional Audio / Video components, etc.) to the system.

NOTE: These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with article 810 of the National Electrical Code, ANSI / NFPA 70.

NOTE: Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel.

SPA TROUBLE SHOOTING GUIDE

NOTHING ON THE SPA OPERATES-

1. Check the control panel display for any messages. If there is a message, refer to the diagnostic section on that model spa. There you will find the meaning of the message and what action is to be taken.

2. If there is no message on your control panel, check and reset the GFCI and house breaker.

**The GFCI should be located in a weather proof box close to the spa, but no closer than 5 ft.*

If the spa does not respond, contact your local service company.

PUMP(S) DO NOT OPERATE -

1. Press the "Jets" button on your control panel.
If you hear the pumps trying to operate:
A. Check that all the slice valves are open. See photo on page 14.
B. Pump may need to be primed. See page 25.
C. Check that the air controls are open. See photo on page 12.
If you do not hear anything from the pump, contact your local service company.

POOR JET PERFORMANCE

1. Make sure pump is operating

2. Check that the water level is adequate (up to minimum safe water level side)

3. Make sure the jets are open and the air controls are open. See page 12.

4. Check for dirty filters. Clean if necessary.

SPA TROUBLE SHOOTING GUIDE

SPA NOT HEATING

* If the spas heater has failed, the majority of the time it will trip the GFCI breaker. If the spa is not heating and has not tripped the breaker, please follow these steps:

1. Check the control panel for diagnostic messages. Refer to your spa models diagnostic message area in previous sections. Follow steps to alleviate message.

2. Check water set temperature at control panel.

3. Check for dirty filters. Clean if necessary.

4. Check "heat mode" the spa is set in. Spa should be in standard mode.

5. Check the control panel for heater light indicator, see controls section of manual. If the indicator is on, the spa should be heating. Wait a reasonable amount of time (approximately 1 hour) to see if the water temperature is changing.

6. Check to make sure that the pump is primed and all slice valves are open.

7. Reset power to the spa at GFCI breaker.

8. If spa is still not heating, contact your dealer for service.

GFCI IS TRIPPING

A ground fault circuit interrupter (GFCI) is required by the National Electrical Code for your protection. The tripping of the GFCI may be caused by a component on the spa or by an electrical problem. Electrical problems include but are not limited to, a faulty GFCI breaker, spa component, power fluctuations, or improper wiring. It may be necessary to contact an electrician if your dealer recommends doing so.

Note: These are areas that will require the spa owner to perform routine maintenance. These are not areas covered under the warranty of the spa.

CLEANING JETS

The majority of jets in your spa can individually be turned on/off. If any of these jets become hard to turn, it will be necessary to remove the jet to clean it as grit/sand and mineral deposit may be present.

The jets in your spa can be removed for cleaning by unscrewing them (counter clockwise) and then pulling out the jet.

To Clean Jets

Place the jet(s) in a container, fully immerse in white vinegar. Let the jet(s) soak overnight and then rinse with water. Reinstall the jet(s). It may be necessary to clean grit and deposits from the white jet body (mounted in the spa shell) by using a small bristled brush.

CLEANING DIVERTER VALVES

Some Legend Series Spas have diverter valves. Due to mineral deposits and grit/sand that may get into the internal parts of the diverter valve, it may become hard to turn or freeze up completely. In this case, it is necessary to remove the handle and cap of the diverter valve. Before proceeding, make sure the power to the spa is turned off.

Turn the cap piece counter clockwise. It may be necessary to put a clean cloth over the cap and turn it with a wrench.

Once loose, the cap and handle can be pulled up out of the white plumbing fitting.

Wipe down the internal piece that attaches to the cap and handle.

Soak the cap and handle in white vinegar.

The white plumbing fitting should also be wiped down. If the surface of the white plumbing has become too abrasive, you can take wet, fine sandpaper and smooth it out. It is also helpful to use a lubricant (use silicone based, not petroleum based) to allow for an easier turn of the diverter handle.

Rinse the diverter internals and reassemble.

In the future, it is helpful to turn the diverter valve only when the pump is not on. Cleaning your diverter valve should occur every time you drain your spa.

DRAINING YOUR SPA

The drain is located behind the front panel on the far right side. You can access the drain by unscrewing the black thumb screws and removing the corner panel. Grasp the drain cap, and pull the assembly out all the way. Unscrew the cap, then push the assembly back in half way to start the flow of water. Attach a garden hose, if desired. Draining times may vary by model using the external hose bib. A sump pump may also be used to drain the spa quickly.

NOTE: When pushing or pulling the assembly in or out, water will drip from the drain during the transition. This is normal.

Spa Drain

NOTE: To prevent premature failure of your spa cover, always turn AquaFontaine Jets down so that they do not hit the cover when the cover is closed. You do not want to completely turn jets off. Doing so may cause a build up of stagnant water in the water line if not used often.

CARE OF YOUR SPA COVER

Always cover your spa when not in use. This will greatly reduce energy consumption and will cause spa water to heat more rapidly. Water loss and chemical usage will also be reduced.

- Be sure to lock down all straps on cover after each use to prevent wind damage.
- Do not allow spa to sit uncovered in direct sunlight. This may cause damage to exposed surfaces of spa and possible discoloration of spa fittings.
- Periodically hose off both sides of spa cover for maximum life of cover. Once a month use a vinyl cleaner and conditioner on the vinyl portion of your cover. Rinse residue off.
- Keep cover open for 15 minutes after adding chemicals to prevent off gas damage.

NOTE: IF YOUR SPA IS GOING TO BE LEFT EMPTY FOR PROLONGED PERIODS, DO NOT REPLACE COVER DIRECTLY ON SURFACE OF SPA. PLACE 2"-3" BLOCKS BETWEEN COVER AND SPA. THIS ALLOWS FOR ADEQUATE VENTILATION OF COVER AND SPA.

NOTE: The cover warranty is provided through the cover manufacturer and not through Master Spas. You will need to mail the cover warranty back to the cover manufacturer.

CARE OF YOUR SPA CABINET

Your DuraMaster™ Polymer Skirt, Master Tech Skirt or Dreamstone Skirt is a maintenance free skirt. No conditioning is necessary. Simply hose off the waterproof / U.V. resistant material periodically.

FILTER CLEANING

NOTE: Never operate the spa without filters in place. If done, damage will result to pumps and other components. We recommend having an extra set of filters to install when cleaning the filters.

1. Turn power off to the spa.

2. Remove any large or floating debris from the filter area.

3. Remove the filters. Remember that the ECO PUR mineral filters should only be rinsed with clear water and never soaked in a cartridge cleaner. The outer filters should be periodically rinsed and soaked in a cartridge cleaner. Follow the instructions on the cartridge cleaner. The ECO PUR filters should be replaced every 6 months

STAINLESS STEEL

Master Spas uses stainless steel in a number of our spas. Its lasting beauty and resistance to corrosion make it an excellent material for handrails and jets faces.

With the proper care it will keep its luster for many years. All stainless steel can corrode given the right circumstances so we have provided a guide to help you keep the stainless components in your spa looking nice.

Stainless steel derives its ability to resist corrosion by forming a very thin transparent coating on the surface when exposed to oxygen. This coating can be damaged by abrasive materials such as steel wool, sand paper, and other cleaning materials that are abrasive. Chlorine salts, sulfides, or other rusting metals can also erode this thin coating exposing the metal to corrosion.

The best defense to combat corrosion on stainless steel components in your spa is make sure that it is kept clean and free of any chemical build up.

Always:

- Clean frequently with clear clean water.
- Remove any rust spots as soon as they appear with vinegar or a brass, silver, or chrome cleaner.
- Use a good car cleaning wax for extra protection.

Never:

- Clean with mineral acids or bleaches.
- Clean with steel wool or any other abrasive material.
- Leave in contact with iron, steel any other metals.

NOTE: Failure to take proper care of the stainless steel fixture could result with them rusting. Rusting is not covered by the warranty.

NOTE: Do not cover the spa for 15 minutes after adding chemicals as the off gas can cause unwarranted damage.

WARNING:
BEFORE PERFORMING ANY MAINTENANCE ON THE MAST3RPUR SYSTEM, MAKE SURE THE SPA IS SHUT DOWN.

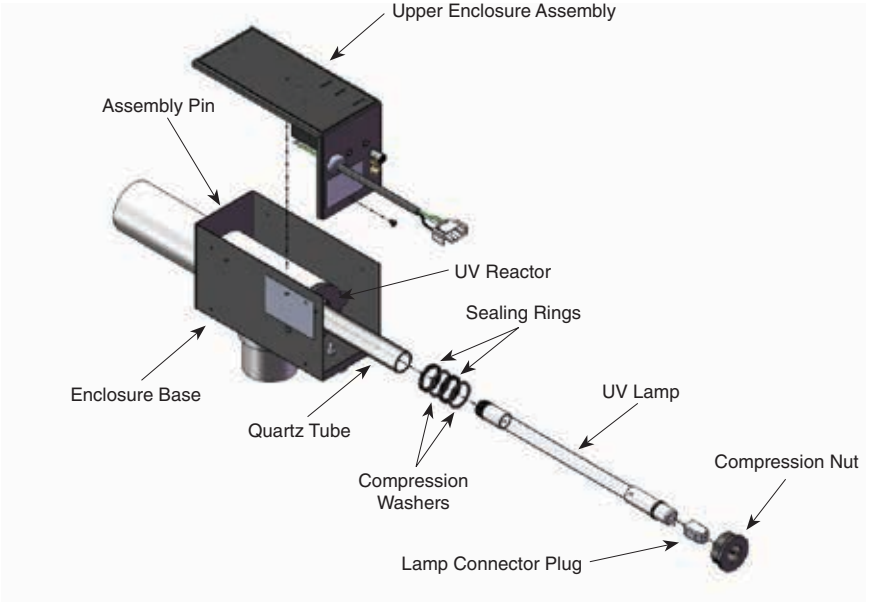


Figure 2: Mast3rPur System Exploded View

a. UV Lamp Removal – See Figure 2.
If the Green Power Indicator is on, but the Blue UV Lamp Indicator is off, the UV lamp needs to be replaced. However, the UV lamp useful life is 18 months. The Lamp must be replaced after 18 months of use, even if the Blue UV Lamp Indicator is still lit.

i. Make sure the unit is disconnected from power and the lamp has cooled before starting maintenance.

ii. Open the Mast3rPur System by removing the screw on the bottom of the Upper Enclosure Assembly, rotating it up and pushing it back to release it from the Assembly Pin.

iii. Unplug the Lamp Connector Plug attached to the end of the UV Lamp and place the Upper Enclosure Assembly in a safe place.

iv. Slowly pull the UV Lamp out of the Quartz Tube by the white ceramic prong end. **DO NOT TOUCH THE UV LAMP GLASS WITH YOUR BARE HANDS.** The oils on your hands can cause hot spots on the lamp and shorten its life. If oil from your fingers is left on the lamp glass, clean it off with a soft towel and rubbing alcohol. If you are removing an old lamp for replacement, handle the lamp carefully and dispose properly (see Environmental Notice below).

v. Make sure the two o-rings and the end cushion remain on the ceramic ends of the lamp as it is set aside in a safe place.

b. Installing the UV Lamp

i. Make sure to handle the new lamp as described in Section A and clean the UV Lamp before installation if needed.

ii. Slowly place the UV Lamp into the Quartz Tube until it contacts the bottom of the tube.

iii. Connect the Lamp Connector Plug to the pins on the lamp.

NOTE: Do not force the Lamp Connector Plug onto the pins. If force is needed, it means that the components are misaligned.

ENVIRONMENTAL NOTICE: UV Lamp CONTAINS MERCURY. Manage in accordance with disposal laws. See: www.lamprecycle.org

c. UV Reactor Service and Maintenance

The UV Lamp is housed in a Quartz Tube. If the Quartz Tube becomes dirty, its ability to transmit rays from the UV Lamp will be diminished and decrease system performance. The Quartz Tube should be removed from the UV Reactor at least once a year, or during a routine spa water change for inspection and cleaning if necessary. **DO NOT REMOVE THE QUARTZ TUBE WITH WATER IN THE SPA**

d. Quartz Tube Removal and Cleaning

CAUTION: Wear proper eye and skin protection for servicing glass components.

i. Make sure the spa is shut down the water removed from the spa, and that the UV Lamp and Quartz Tube have cooled before performing maintenance on the Quartz Tube.

ii. Remove the Upper Enclosure Assembly and UV Lamp as described in Section A and set aside in a safe place.

iii. Remove the plastic Compression Nut. If there is any water remaining in the plumbing, it will start to leak after the Compression Nut is removed.

iv. Grasp the inside of the Quartz Tube and pull it out of the housing. Make sure the Sealing Rings and Compression Washers do not get lost during Quartz Tube removal.

v. Inspect the Sealing Ring for nicks or hardness and the Compression Washers for cracks, replace if necessary.

vi. Clean the Quartz Tube exterior with a mild solution of muriatic acid and water in a ratio of four parts water to one part acid (4:1). DO NOT USE ABRASIVE CLEANERS as they can scratch the high quality quartz glass.

CAUTION: Follow the directions for safe use and handling of muriatic acid on the acid bottle label.

vii. After cleaning the Quartz Tube, wash it off with water and wipe dry with a soft towel. Inspect the Quartz Tube for cracks and replace if cracks are found.

viii. Make sure the inside of the Quartz Tube is dry before replacing the UV Lamp(s).

NOTE: Damage caused by broken quartz tubes is not covered under the Mast3rPur System Limited Warranty.

CAUTION: If broken glass is trapped in the spa system, do not operate the spa. contact a service professional to have the glass removed.

e. Quartz Tube Installation

i. Arrange the Sealing Rings and Compression Washers on the Quartz Tube as shown in Figure 3.

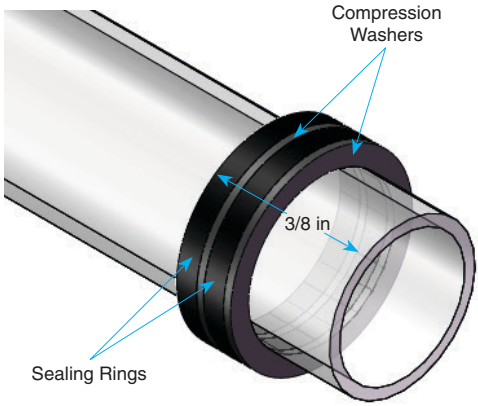


Figure 3: Quartz Tube Seal Assembly Detail

ii. Insert the Quartz Tube partially into the UV Reactor. Place the Compression Nut over the open end of the Quartz Tube and slowly push in till it is resting against the threads on the UV Reactor.

iii. Screw the Compression Nut into the threads till it is finger tight. DO NOT OVERTIGHTEN.

iv. After spa is refilled, turn the spa ON and check the seal around the Quartz Tube for leaks.

v. Correct any leak found by carefully tightening the Compression Nut no more than one turn.

vi. SHUT DOWN the spa once you have confirmed that there are no leaks.

vii. Install the UV Lamp as described in Section B.

viii. Reinstall the Upper Enclosure Assembly to the Enclosure Base. Make sure the Assembly Pin is fitted through the hole in flange of the Enclosure Base before you screw the Upper Enclosure Assembly in place.

ix. The unit is now ready for normal operation.

Contact your Master Spas dealer for replacement Mast3rPur parts.

ACCESSORY WI FI MODULE

The spa control system in your spa has the ability to accept an accessory Wi Fi module that will allow you to connect the spa to your phone and home network when installed. This accessory Wi Fi module is available thru your dealer. This module will need to be connected to the spa control pack located behind the front panel of your spa. Please refer to the Balboa Water Group website for installation and operation information.

http://www.balboawater.com/bwa

SPA CARE AND MAINTENANCE RECORD

	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
Drain & Clean Spa								
Clean Filter Cartridge								
Soak Filter Cartridge in Solution								
Test GFCI								
Clean and Condition Spa Cover								
Miscellaneous Service								
Miscellaneous Service								

INTERNATIONAL

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